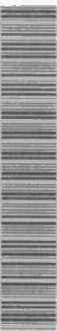


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Drinking Water Surveillance Program

PETERBOROUGH WATER TREATMENT PLANT

Annual Report 1987

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MOE**



**Environment
Ontario**

Jim Bradley, Minister

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**PETERBOROUGH
WATER TREATMENT PLANT**

**DRINKING WATER SURVEILLANCE
PROGRAM**

ANNUAL REPORT 1987

**ONTARIO MINISTRY OF ENVIRONMENT
OCTOBER 1988**

c. Queen's Printer for Ontario, 1988

ACKNOWLEDGEMENTS

The Drinking Water Surveillance Program (DWSP) employs a team approach requiring the co-operative effort of the Ministry of the Environment (MOE) staff from Water Resources and Laboratory Services Branch and the Regions, as well as plant operational staff from the Municipalities.

This annual report was produced by the DWSP Group (Ron Hunsinger, Peter Bohm, Carol Sackville-Duyvelshoff, Chris Fung and John McGrachan) and by Pat Lachmaniuk (on developmental assignment to the Drinking Water Section).

Helpful input and reviews were received from Drinking Water Section Staff, in addition to reviews by other MOE and municipal personnel.

EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

PETERBOROUGH WATER TREATMENT PLANT 1987 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 44 plants are being monitored.

The Peterborough Water Treatment Plant is a conventional treatment plant which treats water from the Otonabee River. The treatment process consists of coagulation, flocculation, sedimentation, filtration, disinfection and fluoridation. This plant serves a population of 61,500 people and has a design capacity of 104 x 1000m³/day.

Water samples from the raw, treated and two distribution sites were taken on a monthly basis and analyzed for approximately 160 parameters. The distribution system was sampled 13 times during 1987 and the raw and treated water was sampled 8 times. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organics (Chloroaromatics, Chlorophenols, Pesticide and PCB, Phenolics, Polynuclear Aromatic Hydrocarbons, Specific Pesticides and Volatiles). Specific Pesticides and Chlorophenols were analysed for in June and November only.

A summary of results is shown in Table 1.

Due to its sampling frequency of once per month, the DWSP is not designed to evaluate all aspects of the bacteriological quality of drinking water; however routine bacteriological monitoring as outlined in the Ontario Drinking Water Objectives (ODWOs) is carried out by the operating authority. In terms of the limited DWSP bacteriological examination the water was of good quality.

Inorganic and Physical parameters (Laboratory Chemistry, Field Chemistry and Metals) were below any applicable health related ODWOs.

Of approximately 110 Organic parameters tested for on a monthly basis, none exceeded health related guidelines.

Many of the substances detected are naturally occurring or treatment by-products.

During 1987 the DWSP sampling results indicated that the Peterborough Water Treatment Plant produced good quality water at the plant and this quality was maintained throughout the distribution system.

SOMMAIRE

PROGRAMME DE SURVEILLANCE DE L'EAU POTABLE

STATION D'ÉPURATION DE L'EAU DE PETERBOROUGH

RAPPORT ANNUEL 1987

Le Programme de surveillance de l'eau potable (PSEP) de l'Ontario fournit des informations immédiates, fiables et à jour sur la qualité de l'eau potable. Le PSEP a débuté officiellement en avril 1986. Il est destiné à englober tous les réseaux municipaux d'alimentation en eau de l'Ontario. Actuellement, 44 stations en font partie.

La station d'épuration de Peterborough est une station classique qui traite l'eau de la rivière Otonabee. Le traitement comporte la coagulation, la floculation, la décantation, la filtration, la désinfection et la fluoration. Cette station dessert une population d'environ 61 500 habitants et a une capacité nominale de 104 x 1 000 m³/jour.

Des prélèvements d'eau brute et d'eau traitée ainsi qu'en deux points du réseau de distribution ont été effectués chaque mois et analysés par rapport à environ 160 paramètres. Les spécimens du réseau de distribution ont été prélevés treize fois et les spécimens d'eau brute et d'eau traitée, huit fois. Les paramètres étaient répartis dans les catégories suivantes : bactériologique, inorganique et physique (analyses en laboratoire et sur place, présence de métaux) et organique (composés aromatiques chlorés, chlorophénols, pesticides et BPC, dérivés phénoliques, hydrocarbures aromatiques polynucléaires, pesticides particuliers et composés volatils). Les chlorophénols et les pesticides particuliers n'ont été analysés qu'en juin et en novembre.

Le tableau 1 résume les résultats obtenus.

En raison de la fréquence des prélèvements (un par mois), le PSEP ne permet pas d'évaluer tous les aspects de la qualité bactériologique de l'eau. Cependant, comme on le recommande dans le cadre des objectifs relatifs à la qualité de l'eau potable en Ontario, un contrôle bactériologique est effectué par l'exploitant. L'analyse bactériologique limitée du PSEP a révélé une eau de bonne qualité.

Les mesures des paramètres inorganiques et physiques étaient inférieures aux limites applicables fixées par l'Ontario pour l'eau potable.

Pour environ 110 paramètres organiques mesurés chaque mois, aucun résultat n'a dépassé les limites acceptables fixées pour la santé.

Un grand nombre de substances détectées apparaissent naturellement ou sont des produits dérivés de l'épuration.

Les résultats des analyses effectuées en 1987 dans le cadre du PSEP ont indiqué que la station d'épuration de Peterborough donnait une eau de bonne qualité et que cette qualité se maintenait dans tout le réseau de distribution.

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE BY SCAN (1987)

SCAN	RAW			TREATED			SITE 1			SITE 2		
	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	30	30	100	32	9	28	49	12	24	45	9	20
CHEMISTRY (FLD)	21	21	100	45	45	100	150	150	100	131	131	100
CHEMISTRY (LAB)	152	128	84	151	115	76	423	376	88	359	321	89
METALS	159	76	47	159	60	37	492	233	47	433	202	46
CHLOROAROMATICS	78	0	0	78	1	1	116	0	0	130	0	0
CHLOROPHENOLS	12	0	0	6	0	0	.	.	.	.	.	.
PAH	51	0	0	51	0	0	.	.	.	.	.	.
PESTICIDES & PCB	154	0	0	156	0	0	233	0	0	247	0	0
PHENOLICS	7	0	0	8	0	0	.	.	.	.	.	.
SPECIFIC PESTICIDES	115	0	0	125	0	0	117	1	0	90	0	0
VOLATILES	224	0	0	224	25	11	366	44	12	311	35	11
TOTAL	1003	255		1035	255		1946	816		1746	698	

NO HEALTH RELATED GUIDELINES/LIMITS WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE

A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

PETERBOROUGH WATER TREATMENT PLANT 1987 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 44 plants are being monitored. Appendix A contains a detailed description of the DWSP.

The DWSP was initiated at the Peterborough Water Treatment Plant in January 1987 with the sampling of distribution system sites. The raw and the treated waters were not sampled until May after new sample lines had been installed.

This report contains information and results for 1987.

PLANT DESCRIPTION

The Peterborough Water Treatment Plant is a conventional treatment plant which treats water from the Otonabee River. The process consists of coagulation, flocculation, sedimentation, filtration, disinfection and fluoridation. Sulphur Dioxide is used as a dechlorinator. This plant serves a population of 61,500

people. It has a design capacity of 104 x 1000m³/day and daily flows ranging from 44 x 1000m³/day to 68 x 1000m³/day.

The plant location is shown in Figure 1. Plant Process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

METHODS

Water samples were obtained from four DWSP approved locations;

- i) Plant Raw - The water originated from the suction well prior to chlorination and was sampled through a copper line. The sample tap is located in the plant laboratory.
- ii) Plant Treated - The water originated from the clearwell after addition of all treatment chemicals and was sampled through a copper line. The sample tap is located in the plant laboratory.
- iii) Distribution System - Site 1 - This house is approximately 1.3 kilometers from the plant. Water was sampled through copper plumbing from the basement laundry tap.
- iv) Distribution System - Site 2 - The distance of this house from the plant is unavailable. Water was sampled through copper plumbing from the kitchen tap.

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

SITE LOCATION MAP

LOCATION: PETERBOROUGH WATER TREATMENT PLANT

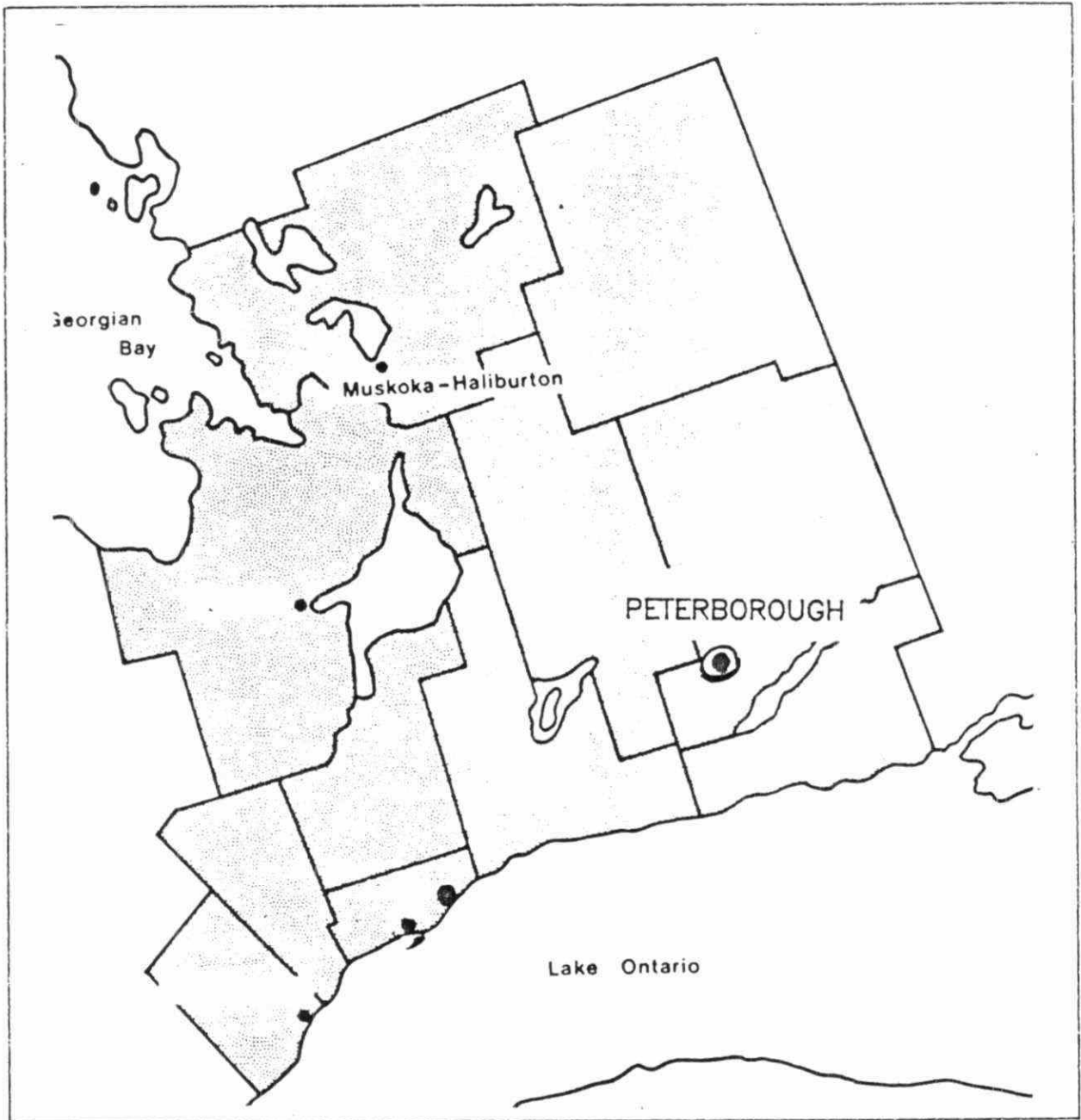


FIGURE 2
PETERBOROUGH WATER TREATMENT PLANT

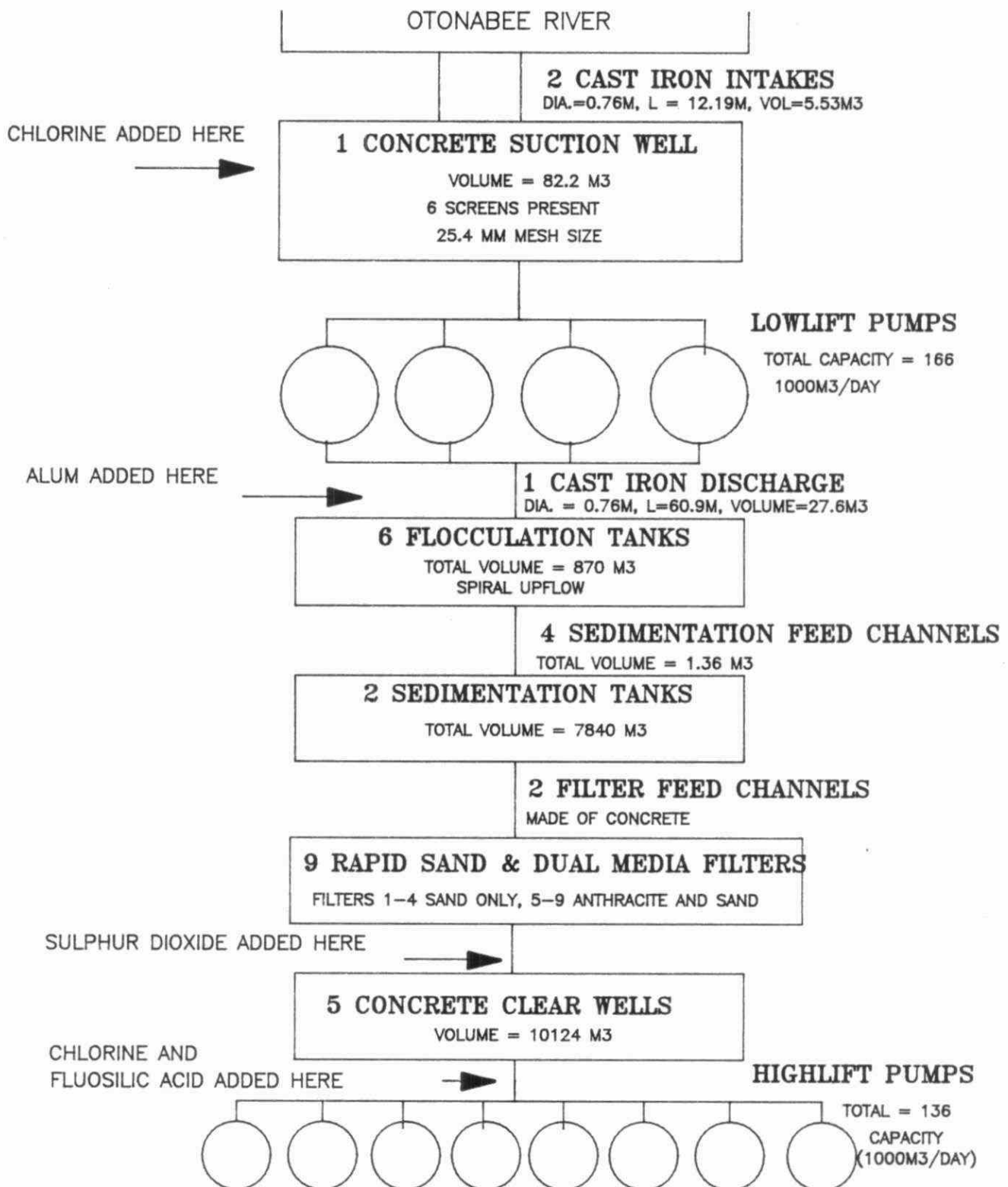


TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

PETERBOROUGH WATER SUPPLY SYSTEM

<u>LOCATION:</u>	1867 ASHBURNHAM DRIVE PETERBOROUGH, ONTARIO K91 1P8 (705-748-9300)
<u>SOURCE:</u>	RAW WATER SOURCE - OTONABEE RIVER
<u>RATED CAPACITY:</u>	104 (1000 M3/DAY)
<u>OPERATION:</u>	MUNICIPALITY
<u>PLANT SUPERINTENDENT:</u>	W. MANLEY
<u>MINISTRY REGION:</u>	CENTRAL
<u>DISTRICT OFFICER:</u>	J.L. BOURQUE

<u>MUNICIPALITY SERVED</u>	<u>POPULATION</u>
PETERBOROUGH	60,800
WOODLAND ACRES	500

Sample lines in the plant were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

At both distribution system locations two types of samples were obtained: a standing and a free flow. The standing sample consisted of water that had been in the household plumbing and service connection for a minimum of six hours. These samples are used to make an assessment of the amount by which the levels inorganic compounds and metals may be changed on standing due to leaching from (or deposition on) the plumbing system. The only analyses carried out on these samples therefore, are General Chemistry and Metals. The free flow sample represented fresh water from the distribution main that had been flowing at the tap for five minutes before being sampled.

Attempts were made to capture the same block of water at each sampling point by taking the retention time into consideration. The retention time was calculated by dividing the volume of water between the two sampling points by the sample day flow. For example, if it was determined that the retention time within the plant was five hours then there would be a five hour interval between the raw and treated sampling. Similarly if it was estimated that it took approximately one day for the water to travel from the plant to the distribution system site, this site would be sampled one day after the treated water from the plant.

Stringent DWSP sampling protocols were followed to eliminate any variance (Appendix B).

Sample day flow, treatment chemical dosages and Field Chemistry measurements were recorded on the day of sampling and were entered on the DWSP database as submitted.

RESULTS

Water at the Peterborough Water Treatment Plant was sampled for approximately 160 parameters on a monthly basis thirteen times in 1987. The Specific Pesticides and Chlorophenols scans were sampled for in June and November only. Polynuclear Aromatic Hydrocarbons and Phenolics were only analysed for in the raw and treated water at the plant.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analysed for by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value

detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 presents parameters not detected.

Associated guidelines and detection limits are also supplied on both tables. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters, these are currently under review. When an ODWO is not available guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS) recently initiated by the MOE catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

As stated under Results, traces do not indicate quantifiable values, as defined by established MOE Laboratory analytical reporting protocols. The occasional finding of a trace level of

a contaminant is thus not considered to be significant. They can be useful in trend analysis or confirmation of the presence of a specific contaminant that is repeatedly detected at these levels. DISCUSSION OF GUIDELINES AND LIMITS THEREFORE, IS ONLY CONDUCTED ON POSITIVE RESULTS.

Bacteriology

Positive results for the Bacteriology scan were present nine times in the treated water, twelve times in the distribution system Site 1 water and nine times in the Site 2 water. The positive parameters were Standard Plate Count, Total Coliform and/or Total Coliform Background and Presence/Absence test.

Standard Plate Counts on the distributed waters were very low, indicating that good microbiological quality was maintained in the distribution system.

Due to its sampling frequency of once per month, the DWSP is not designed to evaluate all aspects of the bacteriological quality of water. Routine bacteriological monitoring as recommended in the ODWOs is carried out by the operating authority. Water from the Peterborough Water Treatment Plant, in terms of the limited DWSP bacteriological examination, was of good quality.

Inorganic and Physical Parameters

Laboratory and Field Chemistry

The results for Laboratory and Field Chemistry scans were below any applicable health related ODWOs .

There are ODWOs that are set for parameters which are related to aesthetic quality rather than health; one of these is Organic Nitrogen. Organic Nitrogen values are calculated by subtracting the value for Ammonia (Ammonium Total) from the value for Total Kjeldahl Nitrogen (Nitrogen Tot Kjeld). The aesthetic ODWO of 0.15 mg/L was exceeded in many of the treated water samples and distribution system samples. When Organic Nitrogen exceeds 0.15 mg/L in treated water some taste and odour problems can result.

This guideline is exceeded in most supplies. Based on the information obtained from the DWSP, which generally indicates no problems with this parameter exceedence, the guideline may be modified when the ODWOs are reviewed.

Colour values exceeded the aesthetic ODWO of 5 True Colour Units (TCU) in six of the standing and free flow samples from distribution system Site 1 and six of the standing and free flow samples from Site 2. Colour in drinking water may be due to the presence of natural or synthetic organic substances as well as certain metallic ions.

It is desirable that the Temperature of drinking water be less than 15°C; the palatability of water is enhanced by its coolness. A temperature below 15°C will tend to reduce the growth of nuisance organisms and hence minimize associated taste, colour, odour and corrosion problems. The desired ODWO was exceeded eleven times in the treated water and the free flow distribution waters.

As part of the treatment process, fluosilic acid is added to the treated water (Table 3). Where fluoridation is practiced, the Fluoride concentration recommended in the ODWO is 1.2 mg/L, plus or minus 0.2 mg/L. Results indicate that this level was not always maintained.

Metals

The results reported for the Metal scan were below any applicable health related ODWOs.

Elevated levels of Copper, Lead, Nickel and Zinc were detected in the standing samples from the distribution system waters as compared to the free flow samples thus, indicating that small quantities of these metals were leached from the household plumbing as the water stood overnight.

At present, there is no evidence that Aluminum is physiologically harmful and no health limit has been specified. The measure of residual Aluminum in the treated water is important to indicate efficiency of the treatment process. The ODWOs indicate that a

useful guideline is to maintain a residual below 0.1 mg/L as Al in the water leaving the plant. Aluminum values exceeded the ODWO operational guideline forty-two times in the treated waters.

The Mercury level in the December distribution system Site 1 water was higher than for the previous months. Over the past year in the DWSP it has been observed that potassium dichromate, used to preserve Mercury samples, has a limited shelf-life and may show false positives for the presence of Mercury. As the preservative deteriorates Mercury levels may increase as a result of interferences and the preservative is replaced.

Organic Parameters

Chloroaromatics

Results of the Chloroaromatics scan showed that two parameters were detected:

Hexachloroethane

2,3,6-Trichlorotoluene

Hexachloroethane was detected at trace levels, once in the treated water, once in the distribution system Site 1 water and twice in the Site 2 water.

2,3,6-Trichlorotoluene was detected in the August treated water sample at 51.0 ng/L. Although no guidelines exists for this chloroaromatic, the Ministry has made a submission to the Federal/Provincial sub-committee on drinking water of the

Federal/Provincial Advisory Committee on Environmental and Occupational Health to consider setting a drinking water guideline.

Review of these results, along with information from other water supplies on DWSP, would indicate that certain Chloroaromatics appear more frequently in the treated water than in the raw and almost always only at trace levels. These occurrences could possibly be due to a reaction of chlorine with organics present in the water or in the distribution system.

Chlorophenols

Results of the Chlorophenol scan showed that no Chlorophenols were detected.

Pesticides and PCB (Polychlorinated Biphenyl)

Results of the Pesticides and PCB scan showed that three pesticides were detected:

Alpha BHC

Beta BHC

Lindane

Lindane consists of several isomers of BHC (Benzene Hexachloride). Alpha BHC is the isomer predominantly found in the Great Lakes basin as indicated in results from other water supplies on DWSP.

Alpha BHC was detected at trace levels, twice in the raw water, four times in the treated water, four times in the distribution system Site 1 water, and five times in the Site 2 water.

Beta BHC was detected at a trace level, once in the treated water.

Lindane was detected at trace levels, once in the treated water and twice in the distribution system Site 1 water.

Specific Pesticides

Results of the Specific Pesticide scan showed that two parameters were detected:

Bladex

Simazine

Bladex was detected at 1140 ng/L in the January distribution system Site 1 water. This is below Health and Welfare Canada's Interim Maximum Acceptable Concentration (IMAC) for drinking water of 10,000 ng/L.

Simazine was detected at a trace level, once in the distribution system Site 1 water.

Phenolics

Phenolics were detected at trace levels, three times in the raw water and four times in the treated water. Phenolic compounds are present in the aquatic environment as a result of natural and/or

industrial processes.

Polynuclear Aromatic Hydrocarbons (PAH)

Results of the PAH scan showed that no PAHs were detected.

Volatiles

Results of the Volatile scan showed that seven parameters, other than Trihalomethanes (THMs), were detected:

- Benzene
- Toluene
- Ethylbenzene
- Para & Meta-Xylene
- Ortho-Xylene
- Carbon Tetrachloride
- Tetrachloroethylene

Benzene was detected at trace levels, twice in the distribution system Site 1 water and once in the Site 2 water.

Toluene was detected at trace levels, once in the treated water, once in the distribution system Site 1 water and twice in the Site 2 water. The October Site 1 water value of 0.60 ug/L was below the California State District of Health Guideline Level of 100 ug/L. Subsequent to the printing of Table 5, Health and Welfare Canada have published an Aesthetic Objective (AO) for Toluene in drinking water of 24 ug/L. This objective was set based on taste impairment, but only after a review of toxicological data indicated it to be below the level considered

to constitute a health hazard.

Ethylbenzene was detected at trace levels, twice in the treated water, once in the distribution system Site 1 water and once in the Site 2 water.

Para and Meta-Xylene are reported as one compound, M-Xylene and were detected at trace levels, once in the treated water, distribution system Site 1 water and Site 2 water.

Ortho-Xylene (O-Xylene) was detected at trace levels, once in the treated water and once in both distribution system waters.

These volatiles are typically found on an occasional basis at other water supplies included on the DWSP usually at trace levels.

Carbon Tetrachloride was detected at a trace level, once in the treated water.

Tetrachloroethylene was detected at trace levels, once in the treated water and twice in the distribution system Site 1 water.

THMs are known to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised mainly of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs.

Chloroform, Dichlorobromomethane and Total THMs were detected in all treated waters. Chlorodibromomethane was detected in some treated water samples at low or trace levels. All THM occurrences were well below the ODWO of 350 ug/L for Total THMs.

CONCLUSIONS

The Peterborough Water Treatment Plant for the sample year of 1987 produced good quality water at the plant and this was maintained throughout the distribution system.

No health related guidelines, for organic or inorganic parameters, were exceeded during 1987.

RECOMMENDATIONS

Three recommendations can be made:

- 1) The data base should be reviewed in consultation with Regional, Plant and DWSP personnel to determine if sampling location, sampling frequency and the number of parameters analysed should be revised to allow a more efficient characterization of the water.
- 2) The reason for elevated Aluminum levels in treated water samples should be investigated.

3) The fluoridation practice should be adjusted to ensure that the recommended levels of Fluoride are maintained in the distributed water.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SAMPLE DAY CONDITIONS			TREATMENT CHEMICAL DOSAGES (MG/L)				
DATE	RETENTION TIME(HRS)	FLOW (1000 M3)	PRE-CHLORINATION	COAGULATION	POST-CHLORINATION	FLUORIDATION	DECHLORINATION
			CHLORINE	POLY ALUMINUM CHLORIDE	CHLORINE	FLUOSILIC ACID	SULPHUR DIOXIDE
JAN 14	.	44.5	4.00	.	.	.79	.20
FEB 10	.	44.7	4.50	.	.	.85	.15
MAR 10	.	48.3	3.50	2.00	.20	.70	.
APR 14	.	50.3	3.50	2.00	.30	1.20	.
MAY 11	1.0	54.5	4.00	8.00	.20	.80	.
JUN 08	1.6	45.4	4.50	6.00	.	.70	.40
JUL 21	2.0	68.1	5.00	3.00	.	1.00	.70
AUG 18	2.5	68.0	5.00	3.40	.	1.20	.60
SEP 14	2.5	61.0	4.00	2.70	.	1.00	.30
OCT 14	6.2	45.4	4.00	4.10	.	.68	.60
NOV 11	5.7	50.0	3.50	5.00	.	.80	.15
DEC 08	6.0	47.0	3.00	6.10	.10	.78	.

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN ----	PARAMETER -----	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
BACTERIOLOGICAL	AEROMONAS SP	0	0	0	0	0	0	0	0	0	1	0	0
	COLIFORM	0	0	0	0	0	0	0	0	0	1	0	0
	ESCHERICHIA COLI BY PRESENCE/ABSENCE	0	0	0	0	0	0	0	0	0	1	0	0
	FECAL COLIFORM	0	0	0	0	0	0	0	0	0	1	0	0
	FECAL COLIFORM MEMBRANE FILTRATION	8	8	0	0	0	0	0	0	0	0	0	0
	P/A BOTTLE	0	0	0	8	0	0	13	0	0	11	1	0
	STANDARD PLATE COUNT MEMBRANE FILT.	6	6	0	8	6	0	12	10	0	7	6	0
	STAPH AUREUS	0	0	0	0	0	0	0	0	0	1	0	0
	TOTAL COLIFORM BACKGROUND MF	8	8	0	8	3	0	12	1	0	11	2	0
	TOTAL COLIFORM MEMBRANE FILTRATION	8	8	0	8	0	0	12	1	0	11	0	0
*TOTAL SCAN BACTERIOLOGICAL		30	30	0	32	9	0	49	12	0	45	9	0
*TOTAL GROUP BACTERIOLOGICAL		30	30	0	32	9	0	49	12	0	45	9	0
CHEMISTRY (FLD)	FIELD COMBINED CHLORINE RESIDUAL	0	0	0	8	8	0	26	26	0	22	22	0
	FIELD FREE CHLORINE RESIDUAL	0	0	0	8	8	0	26	26	0	22	22	0
	FIELD PH	5	5	0	5	5	0	26	26	0	21	21	0
	FIELD TEMPERATURE	8	8	0	8	8	0	26	26	0	22	22	0
	FIELD TOTAL CHLORINE RESIDUAL	0	0	0	8	8	0	26	26	0	22	22	0
	FIELD TURBIDITY	8	8	0	8	8	0	20	20	0	22	22	0
*TOTAL SCAN CHEMISTRY (FLD)		21	21	0	45	45	0	150	150	0	131	131	0
CHEMISTRY (LAB)	ALKALINITY	8	8	0	8	8	0	25	25	0	22	22	0
	AMMONIUM TOTAL	8	5	2	8	5	2	26	23	3	22	18	4

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
CHEMISTRY (LAB)	CALCIUM	8	8	0	8	8	0	26	26	0	22	22	0
	CHLORIDE	8	8	0	7	7	0	26	26	0	22	22	0
	COLOUR	8	8	0	8	8	0	26	26	0	22	22	0
	CONDUCTIVITY	8	8	0	8	8	0	26	26	0	22	22	0
	CYANIDE	8	0	0	8	0	0	9	0	0	7	0	0
	FLUORIDE	8	7	1	8	7	0	26	26	0	22	22	0
	HARDNESS	8	8	0	8	8	0	26	26	0	22	22	0
	MAGNESIUM	8	8	0	8	8	0	26	26	0	22	22	0
	NITRITE	8	4	4	8	1	7	26	6	19	22	2	17
	NITROGEN TOTAL KJELDAHL	8	8	0	8	8	0	26	26	0	22	22	0
	PH	8	8	0	8	8	0	26	26	0	22	22	0
	PHOSPHORUS FIL REACT	8	5	3	8	3	4	0	0	0	0	0	0
	PHOSPHORUS TOTAL	8	7	1	8	2	6	0	0	0	0	0	0
	SODIUM	8	8	0	8	8	0	26	26	0	22	22	0
	TOTAL NITRATES	8	4	4	8	2	6	25	10	15	22	15	7
	TOTAL SOLIDS	8	8	0	8	8	0	26	26	0	22	22	0
	TURBIDITY	8	8	0	8	8	0	26	26	0	22	22	0
*TOTAL SCAN CHEMISTRY (LAB)		152	128	15	151	115	25	423	376	37	359	321	28
METALS	ALUMINUM	8	8	0	8	8	0	25	25	0	22	22	0
	ARSENIC	8	0	0	8	0	0	25	1	0	22	0	0
	BARIUM	8	8	0	8	8	0	25	25	0	22	22	0
	BERYLLIUM	8	0	0	8	0	0	25	0	0	22	0	0
	BORON	8	0	3	8	0	2	25	1	6	22	1	5
	CADMIUM	8	0	0	8	0	0	25	0	0	22	1	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN ----	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
METALS	CHROMIUM	8	2	0	8	0	0	25	3	0	22	3	0
	COBALT	8	1	0	8	0	0	25	1	0	22	0	0
	COPPER	8	8	0	8	1	0	25	25	0	22	22	0
	CYANIDE	0	0	0	0	0	0	4	0	0	4	0	0
	IRON	8	8	0	8	7	0	25	23	0	22	21	0
	LEAD	8	1	0	8	0	0	25	12	0	22	9	0
	MANGANESE	8	8	0	8	8	0	25	25	0	22	22	0
	MERCURY	7	7	0	7	7	0	13	7	0	11	6	0
	MOLYBDENUM	8	1	0	8	0	0	25	0	0	22	0	0
	NICKEL	8	0	0	8	0	0	25	13	0	22	7	0
	SELENIUM	8	0	0	8	0	0	25	0	0	22	0	0
	STRONTIUM	8	8	0	8	8	0	25	25	0	22	22	0
	URANIUM	8	8	0	8	8	0	25	23	2	22	22	0
	VANADIUM	8	0	0	8	1	0	25	2	0	22	2	0
	ZINC	8	8	0	8	4	0	25	22	0	22	20	0
*TOTAL SCAN METALS		159	76	3	159	60	2	492	233	8	433	202	5
*TOTAL GROUP INORGANIC & PHYSICAL		332	225	18	355	220	27	1065	759	45	923	654	33
CHLOROAROMATICS	123 TRICHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	1234 TETRACHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	1235 TETRACHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	124 TRICHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	1245 TETRACHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	135 TRICHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	236 TRICHLOROTOLUENE	6	0	0	6	1	0	9	0	0	10	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
CHLOROAROMATICS	245 TRICHLOROTOLUENE	6	0	0	6	0	0	9	0	0	10	0	0
	26A TRICHLOROTOLUENE	6	0	0	6	0	0	9	0	0	10	0	0
	HEXACHLOROBUTADIENE	6	0	0	6	0	0	9	0	0	10	0	0
	HEXACHLOROETHANE	6	0	0	6	0	1	8	0	1	10	0	2
	OCTACHLOROSTYRENE	6	0	0	6	0	0	9	0	0	10	0	0
	PENTACHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
*TOTAL SCAN CHLOROAROMATICS		78	0	0	78	1	1	116	0	1	130	0	2
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	1	0	0	0	0	0	0	0	0
	2345 TETRACHLOROPHENOL	2	0	0	1	0	0	0	0	0	0	0	0
	2356 TETRACHLOROPHENOL	2	0	0	1	0	0	0	0	0	0	0	0
	245-TRICHLOROPHENOL	2	0	0	1	0	0	0	0	0	0	0	0
	246-TRICHLOROPHENOL	2	0	0	1	0	0	0	0	0	0	0	0
	PENTACHLOROPHENOL	2	0	0	1	0	0	0	0	0	0	0	0
*TOTAL SCAN CHLOROPHENOLS		12	0	0	6	0	0	0	0	0	0	0	0
PAH	ANTHANTHRENE	0	0	0	0	0	0	0	0	0	0	0	0
	ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(A) ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO (A) PYRENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(B) CHRYSENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(B) FLUORANTHENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(E)PYRENE	3	0	0	3	0	0	0	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN -----	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
PAH	BENZO(G,H,I) PERYLENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(J) FLUORANTHENE	0	0	0	0	0	0	0	0	0	0	0	0
	BENZO(K) FLUORANTHENE	3	0	0	3	0	0	0	0	0	0	0	0
	CHRYSENE	3	0	0	3	0	0	0	0	0	0	0	0
	CORONENE	3	0	0	3	0	0	0	0	0	0	0	0
	DIBENZO(A,H) ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	DIMETHYL BENZO(A) ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	FLUORANTHENE	3	0	0	3	0	0	0	0	0	0	0	0
	INDENO(1,2,3-C,D) PYRENE	3	0	0	3	0	0	0	0	0	0	0	0
	PERYLENE	3	0	0	3	0	0	0	0	0	0	0	0
	PHENANTHRENE	3	0	0	3	0	0	0	0	0	0	0	0
	PYRENE	3	0	0	3	0	0	0	0	0	0	0	0
*TOTAL SCAN PAH		51	0	0	51	0	0	0	0	0	0	0	0
PESTICIDES & PCB	ALACHLOR	7	0	0	8	0	0	13	0	0	10	0	0
	ALDRIN	6	0	0	6	0	0	9	0	0	10	0	0
	ALPHA BHC	6	0	2	6	0	4	9	0	4	10	0	5
	ALPHA CHLORDANE	6	0	0	6	0	0	9	0	0	10	0	0
	ATRATONE	7	0	0	8	0	0	13	0	0	10	0	0
	BETA BHC	6	0	0	6	0	1	9	0	0	10	0	0
	DIELDRIN	6	0	0	6	0	0	9	0	0	10	0	0
	ENDRIN	6	0	0	6	0	0	9	0	0	10	0	0
	ETHYLENE DIBROMIDE	8	0	0	8	0	0	9	0	0	7	0	0
	GAMMA CHLORDANE	6	0	0	6	0	0	9	0	0	10	0	0
	HEPTACHLOR	6	0	0	6	0	0	9	0	0	10	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
PESTICIDES & PCB	HEPTACHLOR EPOXIDE	6	0	0	6	0	0	9	0	0	10	0	0
	HEXACHLOROBENZENE	6	0	0	6	0	0	9	0	0	10	0	0
	LINDANE	6	0	0	6	0	1	9	0	2	10	0	0
	METHOXYCHLOR	6	0	0	6	0	0	9	0	0	10	0	0
	MIREX	6	0	0	6	0	0	9	0	0	10	0	0
	O,P-DDT	6	0	0	6	0	0	9	0	0	10	0	0
	OXYCHLORDANE	6	0	0	6	0	0	9	0	0	10	0	0
	PCB	6	0	0	6	0	0	9	0	0	10	0	0
	PP-DDD	6	0	0	6	0	0	9	0	0	10	0	0
	PPDDE	6	0	0	6	0	0	9	0	0	10	0	0
	PPDDT	6	0	0	6	0	0	9	0	0	10	0	0
	THIODAN I	6	0	0	6	0	0	9	0	0	10	0	0
	THIODAN II	6	0	0	6	0	0	9	0	0	10	0	0
	THIODAN SULPHATE	6	0	0	6	0	0	9	0	0	10	0	0
*TOTAL SCAN PESTICIDES & PCB		154	0	2	156	0	6	233	0	6	247	0	5
PHENOLICS		7	0	3	8	0	4	0	0	0	0	0	0
*TOTAL SCAN PHENOLICS		7	0	3	8	0	4	0	0	0	0	0	0
SPECIFIC PESTICIDES		2	0	0	2	0	0	0	0	0	0	0	0
	2,4 D PROPIONIC ACID	2	0	0	2	0	0	0	0	0	0	0	0
	2,4,5-T	2	0	0	2	0	0	0	0	0	0	0	0
	2,4-D	2	0	0	2	0	0	0	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
SPECIFIC PESTICIDES	24-DICHLOROPHENOXYBUTYRIC	2	0	0	2	0	0	0	0	0	0	0	0
	AMETRYNE	7	0	0	8	0	0	13	0	0	10	0	0
	AMINOCARB	0	0	0	0	0	0	0	0	0	0	0	0
	ATRAZINE	7	0	0	8	0	0	13	0	0	10	0	0
	BENOMYL	0	0	0	0	0	0	0	0	0	0	0	0
	BLADEX	7	0	0	8	0	0	13	1	0	10	0	0
	BUX (METALKAMATE)	1	0	0	1	0	0	0	0	0	0	0	0
	CARBOFURAN	2	0	0	2	0	0	0	0	0	0	0	0
	DIALATE	2	0	0	2	0	0	0	0	0	0	0	0
	DIAZINON	2	0	0	2	0	0	0	0	0	0	0	0
	DICAMBA	2	0	0	2	0	0	0	0	0	0	0	0
	DICHLOROVOS	2	0	0	2	0	0	0	0	0	0	0	0
	DURSBAN	2	0	0	2	0	0	0	0	0	0	0	0
	EPTAM	2	0	0	2	0	0	0	0	0	0	0	0
	ETHION	2	0	0	2	0	0	0	0	0	0	0	0
	GUTHION	0	0	0	0	0	0	0	0	0	0	0	0
	IPC	2	0	0	2	0	0	0	0	0	0	0	0
	MALATHION	1	0	0	2	0	0	0	0	0	0	0	0
	METHYL PARATHION	2	0	0	2	0	0	0	0	0	0	0	0
	METHYLTRITHION	2	0	0	2	0	0	0	0	0	0	0	0
	METOLACHLOR	7	0	0	8	0	0	13	0	0	10	0	0
	MEVINPHOS	2	0	0	2	0	0	0	0	0	0	0	0
	PARATHION	2	0	0	2	0	0	0	0	0	0	0	0
	PHORATE (THIMET)	2	0	0	2	0	0	0	0	0	0	0	0
	PICHLORAM	0	0	0	0	0	0	0	0	0	0	0	0
	PROMETONE	7	0	0	8	0	0	13	0	0	10	0	0
	PROMETRYNE	7	0	0	8	0	0	13	0	0	10	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN ----	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
SPECIFIC PESTICIDES	PROPAZINE	7	0	0	8	0	0	13	0	0	10	0	0
	PROPOXUR	2	0	0	2	0	0	0	0	0	0	0	0
	RELDAN	2	0	0	2	0	0	0	0	0	0	0	0
	RONNEL	2	0	0	2	0	0	0	0	0	0	0	0
	SENCOR	7	0	0	8	0	0	13	0	0	10	0	0
	SEVIN (CARBARYL)	2	0	0	2	0	0	0	0	0	0	0	0
	SILVEX	2	0	0	2	0	0	0	0	0	0	0	0
	SIMAZINE	7	0	0	8	0	0	13	0	1	10	0	0
	SUTAN (BUTYLATE)	2	0	0	2	0	0	0	0	0	0	0	0
	TOXAPHENE	0	0	0	0	0	0	0	0	0	0	0	0
*TOTAL SCAN SPECIFIC PESTICIDES		115	0	0	125	0	0	117	1	1	90	0	0
VOLATILES	1,1 DICHLOROETHANE	8	0	0	8	0	0	13	0	0	11	0	0
	1,1 DICHLOROETHYLENE	8	0	0	8	0	0	13	0	0	11	0	0
	1,2 DICHLOROBENZENE	8	0	0	8	0	0	13	0	0	11	0	0
	1,2 DICHLOROETHANE	8	0	0	8	0	0	13	0	0	11	0	0
	1,2 DICHLOROPROPANE	8	0	0	8	0	0	13	0	0	11	0	0
	1,3 DICHLOROBENZENE	8	0	0	8	0	0	13	0	0	11	0	0
	1,4 DICHLOROBENZENE	8	0	0	8	0	0	13	0	0	11	0	0
	111, TRICHLOROETHANE	8	0	0	8	0	0	13	0	0	11	0	0
	112 TRICHLOROETHANE	8	0	0	8	0	0	13	0	0	11	0	0
	1122 TETRA-CHLOROETHANE	8	0	0	8	0	0	13	0	0	11	0	0
	BENZENE	8	0	0	8	0	0	13	0	2	11	0	1
	BROMOFORM	8	0	0	8	0	0	13	0	0	11	0	0
	CARBON TETRACHLORIDE	8	0	0	8	0	1	13	0	0	11	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
VOLATILES	CHLOROBENZENE	8	0	0	8	0	0	13	0	0	11	0	0
	CHLORODIBROMOMETHANE	8	0	0	8	1	3	13	2	3	11	0	6
	CHLOROFORM	8	0	0	8	8	0	13	13	0	11	11	0
	DICHLOROBROMOMETHANE	8	0	0	8	8	0	13	13	0	11	11	0
	ETHYLENE DIBROMIDE	0	0	0	0	0	0	4	0	0	4	0	0
	ETHYLBENZENE	8	0	0	8	0	2	13	0	1	11	0	1
	M-XYLENE	8	0	0	8	0	1	13	0	1	11	0	1
	METHYLENE CHLORIDE	8	0	0	8	0	0	11	2	0	10	1	0
	O-XYLENE	8	0	0	8	0	1	13	0	1	11	0	1
	P-XYLENE	8	0	0	8	0	0	13	0	0	11	0	0
	TETRACHLOROETHYLENE	8	0	0	8	0	1	13	0	2	11	0	0
	TOLUENE	8	0	0	8	0	1	13	1	1	11	1	1
	TOTAL TRIHALOMETHANES	8	0	0	8	8	0	13	13	0	11	11	0
	TRANS 1,2 DICHLOROETHYLENE	8	0	0	8	0	0	13	0	0	11	0	0
	TRICHLOROETHYLENE	8	0	0	8	0	0	13	0	0	11	0	0
	TRIFLUOROCHLOROTOLUENE	8	0	0	8	0	0	13	0	0	11	0	0
*TOTAL SCAN VOLATILES		224	0	0	224	25	10	366	44	11	311	35	11
*TOTAL GROUP ORGANIC		641	0	5	648	26	21	832	45	19	778	35	18

TOTAL		1003	255	23	1035	255	48	1946	816	64	1746	698	51

KEY TO TABLES 5 AND 6

- A ONTARIO DRINKING WATER OBJECTIVES
1. Maximum Acceptable Concentration (MAC)
 - 1+. MAC for Total Trihalomethanes
 - 1*. MAC for Bacteriological Analyses
- Poor water quality is indicated when :
- total coliform counts > 0 < 5
 - P/A Bottle Test is present after 48 hours
 - Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
 - Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
 - Standard Plate Count should not exceed 500 organisms per ml at 35 deg C within 48 hours
2. Interim Maximum Acceptable Concentration (IMAC)
 3. Maximum Desirable Concentration (MDC)
 4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.
- B HEALTH & WELFARE CANADA
1. Maximum Acceptable Concentration (MAC)
 2. Proposed MAC
 3. Interim MAC
- C WORLD HEALTH ORGANIZATION
1. Guideline Value (GV)
 2. Tentative GV
 3. Aesthetic GV
- D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
 2. Suggested No-Adverse Effect Level (SNAEL)
 3. Lifetime Health Advisory
 4. EPA Ambient Water Quality Criteria
- F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
 2. Aesthetic Guideline Level
 3. Maximum Admissable Concentration (MADC)
- G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE
- H USSR MAXIMUM PERMISSIBLE CONCENTRATION
- I NEW YORK STATE AMBIENT WATER GUIDELINE

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!AW	No Data: Analysis Withdrawn
!CR	No Data: Could Not Confirm By Reanalysis
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample

RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
RAW	TREATED	SITE 1		SITE 2		
		STANDING	FREE FLOW	STANDING	FREE FLOW	
BACTERIOLOGICAL						
AEROMONAS SP (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0		(A1)
APR	.	.	.	.	.	0
E. COLI (P/A) (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE =		
APR	.	.	.	.	.	0
FECAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 0		(A1)
MAY	4	.	.	.	.	.
JUN	33	.	.	.	.	.
JUL	3	.	.	.	.	.
AUG	62	.	.	.	.	.
SEP	68	.	.	.	.	.
OCT	12	.	.	.	.	.
NOV	36	.	.	.	.	.
DEC	27	.	.	.	.	.
FECAL COLIFORM (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0		(A1)
APR	.	.	.	.	.	0
STANDRD PLATE CNT MF (CT/ML)		DET'N LIMIT = 0		GUIDELINE = 500/ML		(A1)
JAN	.	.	.	2	.	11
	.	.	.	1	.	!AW
FEB	.	.	.	3	.	4
MAR	.	.	.	5	.	0
APR	.	.	.	1	.	2
MAY	1500	1	.	1	.	!AW
JUN	2400 >	1	.	2	.	!AW
JUL	!OP	1	.	!AW	.	.
AUG	!OP	6	.	5	.	.
SEP	660	5	.	0	.	7
OCT	1400	0	.	0	.	!AW
NOV	2400 >	1	.	170	.	6
DEC	1000	0	.	4	.	3
P/A BOTTLE (0=ABSENT)		DET'N LIMIT = 0		GUIDELINE = 0		(A1*)
JAN	.	.	.	0	.	0
	.	.	.	0	.	0
FEB	.	.	.	0	.	0
MAR	.	.	.	0	.	0
APR	.	.	.	0	.	1
MAY	.	0	.	0	.	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	.	0	.	0	.	0
JUL	.	0	.	0	.	.
AUG	.	0	.	0	.	.
SEP	.	0	.	0	.	0
OCT	.	0	.	0	.	0
NOV	.	0	.	0	.	0
DEC	.	0	.	0	.	0
STAPH AUREUS (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)		
APR	.	.	.	.	.	0
COLIFORM (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)		
APR	.	.	.	.	.	0
TOTAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 5/100ML(A1)		
JAN	.	.	.	1	.	0
	.	.	.	0	.	0
FEB	.	.	.	0	.	0
MAR	.	.	.	0	.	0
APR	.	.	.	0	.	0
MAY	118 A3C	0	.	!LA	.	0
JUN	140 A3C	0	.	0	.	0
JUL	200	0	.	0	.	.
AUG	92 A3C	0	.	0	.	.
SEP	135 A3C	0	.	0	.	0
OCT	300	0	.	0	.	0
NOV	400	0	.	0	.	0
DEC	800	0	.	0	.	0
T COLIFORM BCKGRD MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = N/A		
JAN	.	.	.	0	.	0
	.	.	.	0	.	0
FEB	.	.	.	0	.	0
MAR	.	.	.	0	.	0
APR	.	.	.	0	.	0
MAY	27000	0	.	!LA	.	1060
JUN	27000	1	.	0	.	13
JUL	12600	0	.	0	.	.
AUG	40000	1	.	0	.	.
SEP	2400 >	1	.	1	.	0
OCT	6600	0	.	0	.	0
NOV	2300	0	.	0	.	0
DEC	10700	0	.	0	.	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	
CHEMISTRY (FLD)							
FLD CHLORINE (COMB) (MG/L)			DET'N LIMIT = N/A	GUIDELINE =	N/A		
JAN	.	.	.400	.200	.100	.100	
	.	.	.200	.400	.100	.200	
FEB	.	.	.200	.200	.100	.200	
MAR	.	.	.400	.400	.100	.200	
APR	.	.	.200	.200	.100	.100	
MAY	.	.240	.400	.200	.100	.200	
JUN	.	.310	.200	.200	.300	.100	
JUL	.	.280	.200	.200	.	.	
AUG	.	.360	.200	.200	.	.	
SEP	.	.290	.200	.200	.220	.280	
OCT	.	.180	.400	.200	.100	.300	
NOV	.	.300	.200	.200	.400	.400	
DEC	.	.280	.200	.400	.300	.400	
FLD CHLORINE FREE (MG/L)							
			DET'N LIMIT = N/A	GUIDELINE =	N/A		
JAN	.	.	.100	.700	.100	.100	
	.	.	.100	1.100	.100	.100	
FEB	.	.	.100	.900	.100	.100	
MAR	.	.	.100	.900	.100	.100	
APR	.	.	.100	.900	.200	.200	
MAY	.	1.170	.100	.900	.100	.100	
JUN	.	1.050	.300	.900	.400	.200	
JUL	.	1.220	.300	.900	.	.	
AUG	.	.620	.300	.900	.	.	
SEP	.	.750	.100	1.100	.050	.210	
OCT	.	1.150	.500	1.100	.100	.100	
NOV	.	1.150	.300	1.100	.100	.100	
DEC	.	1.140	.500	1.300	.200	.500	
TOTAL CHLORINE (MG/L)							
			DET'N LIMIT = N/A	GUIDELINE =	N/A		
JAN	.	.	.500	.900	.200	.200	
	.	.	.300	1.500	.200	.300	
FEB	.	.	.300	1.100	.200	.300	
MAR	.	.	.500	1.300	.200	.300	
APR	.	.	.300	1.100	.100	.100	
MAY	.	1.410	.500	1.100	.200	.300	
JUN	.	1.360	.500	1.100	.100	.100	
JUL	.	1.500	.500	1.100	.	.	
AUG	.	.990	.500	1.100	.	.	
SEP	.	1.040	.300	1.300	.270	.490	
OCT	.	1.330	.900	1.300	.200	.400	
NOV	.	1.450	.500	1.300	.500	.500	
DEC	.	1.420	.700	1.700	.500	.900	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
FLD PH (DMSNLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5 (A4)	
JAN	.	.	7.200	7.400	7.400	7.200
	.	.	7.600	7.400	7.300	7.300
FEB	.	.	7.200	7.400	7.300	7.300
MAR	.	.	7.200	7.400	7.200	7.300
APR	.	.	7.400	7.400	7.300	7.300
MAY	8.200	7.350	7.400	7.400	7.400	7.400
JUN	8.050	7.300	7.400	7.300	7.300	7.300
JUL	.	.	7.000	7.300	.	.
AUG	.	.	7.400	7.400	.	.
SEP	.	.	7.400	7.400	8.200	.
OCT	8.250	7.350	7.400	7.400	7.300	7.200
NOV	8.200	7.450	7.200	7.400	7.300	7.300
DEC	8.100	7.450	7.200	7.400	7.400	7.400
TEMPERATURE (DEG.C)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.	.	16.000	2.500	22.000	6.000
	.	.	17.000	4.000	22.000	7.000
FEB	.	.	10.200	2.000	21.000	6.000
MAR	.	.	15.000	4.000	20.000	5.000
APR	.	.	13.500	9.000	18.000	9.000
MAY	16.100	16.000	16.000	14.500	18.500	13.000
JUN	19.400	19.200	18.000	16.500	19.500	17.000
JUL	27.000	26.500	22.000	23.500	.	.
AUG	26.000	25.000	22.000	23.000	.	.
SEP	22.000	21.000	20.000	20.500	21.000	21.000
OCT	10.600	10.800	17.500	13.500	18.000	15.000
NOV	6.100	7.000	16.500	10.500	15.000	11.500
DEC	.300	1.000	14.000	4.000	13.000	8.000
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A		GUIDELINE = 1.0 (A1)	
JAN	.	.	.320	.280	.380	.330
	.	.	.330	.290	.360	.330
FEB	.	.	.280	.250	.310	.280
MAR	.	.	.220	.280	.360	.260
APR	.	.	.450	.360	.400	.370
MAY	1.050	.210	.320	.310	.330	.310
JUN	.920	.230	.220	.220	.400	.290
JUL	1.050	.240	.	.	.	.
AUG	1.050	.280	.	.	.	.
SEP	1.250	.320	.	.	.350	.310
OCT	.800	.200	.240	.210	.350	.300
NOV	.700	.210	.240	.210	.150	.180
DEC	.500	.190	.180	.220	.240	.190

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	

CHEMISTRY (LAB)							
ALKALINITY (MG/L)		DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)			
JAN	.	.	87.900	87.400	88.900	88.200	
	.	.	87.200	86.400	87.600	87.500	
FEB	.	.	87.800	87.400	88.200	87.900	
MAR	.	.	IPH	90.200	90.900	90.700	
APR	.	.	87.200	88.000	86.900	87.300	
MAY	104.800	93.300	94.700	95.600	96.400	95.800	
JUN	101.700	87.900	88.100	88.200	88.400	87.300	
JUL	94.300	84.600	85.700	85.300	.	.	
AUG	96.400	87.500	86.900	86.900	.	.	
SEP	94.500	83.300	84.700	84.600	84.900	84.200	
OCT	93.900	84.100	83.400	83.300	83.900	83.200	
NOV	89.900	79.100	80.400	80.600	80.100	84.100	
DEC	92.500	83.000	82.900	85.200	83.200	83.000	

CALCIUM (MG/L)		DET'N LIMIT = .100		GUIDELINE = 100. (F2)			
JAN	.	.	37.200	37.000	37.900	36.900	
	.	.	35.200	35.500	36.100	35.900	
FEB	.	.	38.100	37.600	38.300	36.500	
MAR	.	.	37.400	37.400	37.800	37.400	
APR	.	.	36.500	36.800	37.000	36.100	
MAY	40.600	41.100	40.600	40.800	41.000	40.400	
JUN	40.200	40.400	40.200	40.200	40.600	40.000	
JUL	36.000	37.000	37.800	37.200	.	.	
AUG	36.400	35.600	37.800	37.400	.	.	
SEP	33.400	34.000	34.600	34.800	36.000	36.000	
OCT	35.400	35.800	35.600	36.400	36.400	36.000	
NOV	33.400	33.600	33.800	33.600	34.000	34.200	
DEC	37.400	37.200	36.600	36.800	37.200	36.200	

CHLORIDE (MG/L)		DET'N LIMIT = .200		GUIDELINE = 250.0 (A3)			
JAN	.	.	10.500	10.000	10.500	10.000	
	.	.	10.000	10.000	10.000	10.000	
FEB	.	.	10.000	9.500	10.000	10.000	
MAR	.	.	11.500	11.000	11.500	11.500	
APR	.	.	11.500	11.500	11.500	11.000	
MAY	7.500	14.000	13.500	13.500	13.500	13.000	
JUN	6.500	13.000	13.000	13.000	13.000	13.500	
JUL	6.500	ICR	12.500	12.500	.	.	
AUG	7.000	12.000	12.500	12.500	.	.	
SEP	7.000	12.000	12.000	12.000	12.000	12.000	
OCT	7.000	13.000	12.500	12.500	13.000	12.500	
NOV	7.200	12.100	12.200	11.800	12.100	12.100	
DEC	7.300	11.800	12.000	11.900	12.000	11.900	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
COLOUR (TCU)			DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)	
JAN	.	.	12.000	12.000	12.000	12.000
	.	.	12.500	12.000	14.000	13.500
FEB	.	.	12.500	12.000	12.500	13.500
MAR	.	.	5.500	12.000	14.000	14.000
APR	.	.	11.000	11.000	12.000	11.500
MAY	13.000	4.000	6.000	5.000	5.000	5.000
JUN	10.000	4.000	3.500	3.500	5.000	4.500
JUL	11.000	3.500	5.000	4.000	.	.
AUG	10.500	4.500	5.000	4.000	.	.
SEP	10.500	4.500	4.500	4.000	5.500	6.000
OCT	11.500	3.000	4.000	9.000	5.000	3.500
NOV	10.500	3.500	4.000	4.000	4.500	4.000
DEC	10.000	3.500	5.000	4.000	4.500	4.500
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1		GUIDELINE = 400. (F2)	
JAN	.	.	230	230	232	229
	.	.	228	227	230	229
FEB	.	.	230	227	231	229
MAR	.	.	3620 PPS	232	243	240
APR	.	.	235	236	236	234
MAY	245	254	247	256	259	258
JUN	235	243	243	243	245	244
JUL	218	228	231	231	.	.
AUG	221	228	230	230	.	.
SEP	218	226	226	227	226	225
OCT	216	225	223	224	231	224
NOV	216	221	221	221	222	222
DEC	220	223	224	225	225	223
FLUORIDE (MG/L)			DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)	
JAN	.	.	.940	1.050	1.030	.960
	.	.	.960	.930	1.030	.960
FEB	.	.	1.040	1.060	1.050	1.000
MAR	.	.	.860	1.000	1.100	1.070
APR	.	.	.960	1.000	1.030	.990
MAY	.050	1.010	1.120	1.070	1.020	1.020
JUN	.040 <T	.900 <=>	.990	1.100	1.030	1.010
JUL	.070	.900	1.090	1.050	.	.
AUG	.070	.850	.830	.580	.	.
SEP	.060	1.040	.940	1.060	1.080	1.060
OCT	.060	.820	.840	.900	.740	.860
NOV	.060	1.080	.980	.940	1.040	1.000
DEC	.060	.860	1.100	1.120	.960	.960

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
HARDNESS (MG/L)			DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)	
JAN	.	.	106.500	105.500	107.500	105.500
	.	.	103.000	103.000	104.500	104.500
FEB	.	.	110.500	109.500	111.000	106.000
MAR	.	.	109.000	109.000	109.500	108.500
APR	.	.	105.000	105.500	106.000	103.500
MAY	115.500	116.500	114.000	114.000	115.000	113.000
JUN	115.000	116.000	115.000	115.000	116.000	115.000
JUL	104.000	106.000	108.000	106.000	.	.
AUG	106.000	103.000	109.000	108.000	.	.
SEP	98.000	99.000	101.000	102.000	105.000	106.000
OCT	104.000	105.000	104.000	106.000	106.000	105.000
NOV	99.000	98.000	99.000	98.000	99.000	99.000
DEC	108.000	107.000	103.000	106.000	107.000	105.000
MAGNESIUM (MG/L)			DET'N LIMIT = .050		GUIDELINE = 30. (F2)	
JAN	.	.	3.250	3.200	3.150	3.250
	.	.	3.600	3.550	3.550	3.550
FEB	.	.	3.750	3.700	3.700	3.650
MAR	.	.	3.800	3.800	3.700	3.600
APR	.	.	3.400	3.400	3.300	3.300
MAY	3.400	3.400	3.100	3.000	3.000	3.000
JUN	3.600	3.600	3.500	3.600	3.500	3.700
JUL	3.400	3.400	3.400	3.300	.	.
AUG	3.500	3.600	3.500	3.400	.	.
SEP	3.600	3.500	3.600	3.700	3.700	3.800
OCT	3.800	3.700	3.700	3.700	3.700	3.700
NOV	3.800	3.400	3.500	3.300	3.400	3.400
DEC	3.600	3.500	3.000	3.500	3.500	3.500
SODIUM (MG/L)			DET'N LIMIT = .200		GUIDELINE = 200. (C3)	
JAN	.	.	3.500	2.900	3.600	3.100
	.	.	3.900	3.200	3.900	3.700
FEB	.	.	4.600	3.900	3.900	4.000
MAR	.	.	4.600	4.100	4.300	4.200
APR	.	.	3.700	3.800	3.800	3.900
MAY	4.000	3.900	4.200	4.200	4.000	4.200
JUN	3.800	4.000	3.800	4.200	3.800	4.000
JUL	4.000	4.200	4.000	4.200	.	.
AUG	4.000	4.000	4.200	4.200	.	.
SEP	5.000	4.800	4.800	7.200	5.800	5.400
OCT	5.000	4.800	4.800	5.000	4.800	4.800
NOV	4.200	4.200	3.800	3.800	4.000	3.800
DEC	4.600	4.800	4.800	4.600	4.800	4.600

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW

AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = .05	(F2)	
JAN	.	.	.088	.012	.144	.008 <T
	.	.	.008 <T	.006 <T	.028	.006 <T
FEB	.	.	.034	.016	.196	.014
MAR	.	.	.048	.018	.286	.018
APR	.	.	.046	.016	.336	.016
MAY	.002 <T	.008 <T	.026	.016	.034	.022
JUN	BDL	.014	.028	.010	.114	.020
JUL	.036	.016	.032	.026	.	.
AUG	.022	.030	.048	.032	.	.
SEP	.034	.014	.022	.014	.014	.014
OCT	.028	.010	.008 <T	.010	.482	.006 <T
NOV	.004 <T	.004 <T	.024	.010	.020	.010
DEC	.028	BDL	.018	.010	.138	.006 <T

NITRITE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1.000	(A1)	
JAN	.	.	.002 <T	BDL	BDL	BDL
	.	.	.002 <T	.002 <T	.003 <T	.003 <T
FEB	.	.	.003 <T	.002 <T	.003 <T	.003 <T
MAR	.	.	.001 <T	.002 <T	.002 <T	.002 <T
APR	.	.	.014	.011	.010	.009
MAY	.048	.001 <T	.001 <T	.001 <T	.001 <T	.001 <T
JUN	.001 <T	.002 <T	.002 <T	.002 <T	.002 <T	.001 <T
JUL	.004 <T	.003 <T	.005	.007	.	.
AUG	.012	.005	.008	.006	.	.
SEP	.002 <T	.002 <T	.002 <T	.001 <T	.002 <T	.002 <T
OCT	.001 <T	.002 <T	.002 <T	.001 <T	.001 <T	BDL
NOV	.036	.001 <T	.002 <T	.001 <T	.002 <T	.001 <T
DEC	.039	.001 <T	.002 <T	.001 <T	.003 <T	.001 <T

TOTAL NITRATES (MG/L)			DET'N LIMIT = .020	GUIDELINE = 10.000	(A1)	
JAN	.	.	.205	.115	.290	.110
	.	.	.100	.095 <T	.125	.095 <T
FEB	.	.	.085 <T	.095 <T	.260	.130
MAR	.	.	.100	.250	.520	.205
APR	.	.	.265	.260	.635	.255
MAY	.180	.115	.115	.110	.150	.120
JUN	.180	.100	.110	.110	.290	.110
JUL	.025 <T	.025 <T	.060 <T	.070 <T	.	.
AUG	.080 <T	.040 <T	.045 <T	.035 <T	.	.
SEP	.030 <T	.030 <T	.035 <T	.030 <T	.035 <T	.035 <T
OCT	.045 <T	.045 <T	.045 <T	.045 <T	.580	.045 <T
NOV	.115	.065 <T	.065 <T	.065 <T	.090 <T	.065 <T
DEC	.105	.070 <T	.070 <T	.070 <T	.255	.065 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
SITE	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = .020	GUIDELINE =	N/A	
JAN	.	.	.290	.360	.520	.390
	.	.	.310	.280	.410	.380
FEB	.	.	.450	.340	.770	.330
MAR	.	.	.770	.390	.640	.380
APR	.	.	.350	.270	.450	.270
MAY	.320	.220	.330	.270	.270	.290
JUN	.280	.240	.280	.240	.350	.200
JUL	.280	.290	.290	.250	.	.
AUG	.350	.360	.360	.270	.	.
SEP	.370	.280	.350	.280	.280	.290
OCT	.360	.290	.290	.260	.890	.270
NOV	.420	.300	.360	.320	.330	.310
DEC	.350	.320	.370	.290	.960	.290
PH (DMSNLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)		
JAN	.	.	7.940	7.870	7.940	7.870
	.	.	7.870	7.870	7.870	7.880
FEB	.	.	7.700	7.700	7.680	7.650
MAR	.	.	2.150 PPS	7.800	8.000	7.930
APR	.	.	7.840	7.940	7.960	7.830
MAY	8.170	7.740	8.110	7.950	7.920	7.950
JUN	8.060	7.620	7.810	7.820	7.730	7.680
JUL	8.240	7.580	7.650	7.660	.	.
AUG	8.300	7.800	7.910	7.790	.	.
SEP	8.290	7.720	7.880	7.700	7.900	7.760
OCT	8.270	7.900	8.010	7.930	8.040	7.970
NOV	8.300	8.100	8.190	8.110	8.170	8.150
DEC	8.230	8.060	8.150	8.090	8.140	8.110
PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = .5UG/L	GUIDELINE =	N/A	
MAY	.006	.000 <T	.	.	.	.
JUN	.006	.000 <T	.	.	.	.
JUL	.004	.003	.	.	.	.
AUG	.003	.002	.	.	.	.
SEP	.001 <T	.001 <T	.	.	.	.
OCT	.002 <T	.002	.	.	.	.
NOV	.004	.001 <T	.	.	.	.
DEC	.001 <T	BDL	.	.	.	.
PHOSPHORUS TTL-UNFIL (MG/L)			DET'N LIMIT = .002	GUIDELINE = .40 (F2)		
MAY	.018	.006 <T	.	.	.	.
JUN	.015	.007 <T	.	.	.	.
JUL	.010	.006	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
AUG	.024	.013	.	.	.	.
SEP	.011	.007 <T	.	.	.	.
OCT	.011	.007 <T	.	.	.	.
NOV	.013	.007 <T	.	.	.	.
DEC	.005 <T	.002 <T	.	.	.	.
RESIDUE (TOTAL) (MG/L)	)		DET'N LIMIT = 1.		GUIDELINE = 500. (A3)	
JAN	.	.	150 CRO	150 CRO	151 CRO	149 CRO
	.	.	148 CRO	148 CRO	150 CRO	149 CRO
FEB	.	.	150 CRO	148 CRO	150 CRO	149 CRO
MAR	.	.	257	151 CRO	158 CRO	156 CRO
APR	.	.	153 CRO	153 CRO	153 CRO	152 CRO
MAY	159 CRO	165 CRO	161 CRO	166 CRO	168 CRO	168 CRO
JUN	152 CRO	158 CRO	158 CRO	158 CRO	159 CRO	159 CRO
JUL	152	167	160	165	.	.
AUG	144 CRO	148 CRO	150 CRO	150 CRO	.	.
SEP	141 CRO	147 CRO	147 CRO	147 CRO	147 CRO	146 CRO
OCT	140 CRO	146 CRO	145 CRO	146 CRO	150 CRO	146 CRO
NOV	140 CRO	144 CRO	144 CRO	144 CRO	144 CRO	144 CRO
DEC	143 CRO	145 CRO	146 CRO	146 CRO	146 CRO	145 CRO
TURBIDITY (FTU)	)		DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)	
JAN	.	.	.780	.480	.500	.370
	.	.	.470	.360	.510	.410
FEB	.	.	.630	.780	.510	.470
MAR	.	.	.300	.400	.640	.430
APR	.	.	.710	.470	.490	.440
MAY	1.070	.200	.420	.350	.550	.460
JUN	1.090	.230	.450	.240	.380	.330
JUL	.700	.230	.320	.250	.	.
AUG	.720	.360	.350	.330	.	.
SEP	1.090	.340	.420	.290	.690	.660
OCT	.860	.220	.310	.260	.410	.280
NOV	.580	.200	.190	.240	.220	.200
DEC	.410	.230	.240	.210	.220	.210

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW

METALS						
ALUMINUM (MG/L)			DET'N LIMIT = .004	GUIDELINE = .10		(A4)
JAN	.	.	.031	.015	.052	.020
	.	.	.035	.021	.048	.025
FEB	.	.	.019	.005	.028	.009
MAR	.	.	.250	.280	.220	.280
APR	.	.	.280	.280	.230	.250
MAY	.023	.150	.170	.200	.170	.190
JUN	.010	.180	.110	.140	.150	.140
JUL	.013	.170	.100	.140	.	.
AUG	.027	.160	.140	!BT	.	.
SEP	.030	.160	.120	.140	.120	.140
OCT	.021	.130	.130	.130	.110	.130
NOV	.008	.190	.170	.190	.130	.140
DEC	.008	.220	.190	.230	.160	.150

ARSENIC (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = .050		(A1)
APR	.	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	BDL	BDL	!RE	.	.
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL

BARIUM (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1.000		(A1)
JAN	.	.	.031	.029	.031	.022
	.	.	.030	.027	.032	.027
FEB	.	.	.030	.028	.032	.027
MAR	.	.	.029	.028	.034	.027
APR	.	.	.032	.028	.029	.029
MAY	.026	.026	.028	.028	.030	.031
JUN	.029	.029	.029	.029	.030	.030
JUL	.028	.027	.029	.029	.	.
AUG	.026	.025	.025	!BT	.	.
SEP	.028	.027	.027	.028	.027	.027
OCT	.024	.024	.024	.023	.025	.023
NOV	.026	.023	.023	.022	.021	.022
DEC	.023	.023	.025	.023	.023	.020

BORON (MG/L)			DET'N LIMIT = 0.01	GUIDELINE = 5.000		(A1)
JAN	.	.	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL
APR	.	.	.010	.000	BDL	.010
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	.010 <T	.010 <T	BDL	.	.
AUG	BDL	BDL	BDL	!IS	.	.
SEP	.010 <T	.010 <T	.010 <T	BDL	.010 <T	.010 <T
OCT	.010 <T	BDL	.010 <T	BDL	BDL	BDL
NOV	BDL	BDL	.010 <T	BDL	BDL	.010 <T
DEC	.008 <T	BDL	.020 <T	.011 <T	.007 <T	.007 <T

CADMIUM (UG/L)		DET'N LIMIT = 0.300		GUIDELINE = 5.000 (A1)		
JAN	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL
APR	.	.	BDL	BDL	.600	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	BDL	BDL	!BT	.	.
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL

COBALT (MG/L)		DET'N LIMIT = 0.001		GUIDELINE = 1.0 (H)		
JAN	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL
APR	.	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	.001	BDL	.	.
AUG	BDL	BDL	BDL	!BT	.	.
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	.001	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL

CHROMIUM (MG/L)		DET'N LIMIT = 0.001		GUIDELINE = .05 (A1)		
JAN	.	.	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL
APR	.	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.001	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	BDL	BDL	!BT	.	.
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	.001	BDL	.001	BDL	.001	BDL
NOV	.002	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.001	BDL	.001	.001
COPPER (MG/L)						
			DET'N LIMIT = .001		GUIDELINE = 1.0 (A3)	
JAN	.	.	.270	.012	.280	.021
FEB	.	.	.400	.021	.240	.024
MAR	.	.	.230	.013	.210	.017
APR	.	.	.230	.021	.250	.023
MAY	.019	BDL	.170	.023	.170	.033
JUN	.009	BDL	.180	.018	.130	.018
JUL	.009	.001	.180	.017	.120	.021
AUG	.012	BDL	.180	.019	.	.
SEP	.012	BDL	.150	!BT	.	.
OCT	.009	BDL	.150	.019	.370	.035
NOV	.008	BDL	.110	.014	.120	.020
DEC	.009	BDL	.180	.026	.034	.015
DEC	.007	BDL	.160	.010	.060	.014
IRON (MG/L)						
			DET'N LIMIT = .002		GUIDELINE = .300 (A3)	
JAN	.	.	.037	.039	.081	.110
FEB	.	.	.033	.042	.068	.098
MAR	.	.	.035	.040	.074	.120
APR	.	.	.051	.053	.120	.130
MAY	.041	.009	.051	.046	.093	.120
JUN	.048	.010	.008	.006	.045	.075
JUL	.042	.010	.011	BDL	.060	BDL
AUG	.042	.005	.010	.005	.	.
SEP	.018	BDL	BDL	!BT	.	.
OCT	.044	.005	.006	.005	.078	.084
NOV	.037	.027	.016	.014	.056	.031
DEC	.031	.010	.035	.042	.025	.021
DEC	.021	.008	.008	.015	.029	.027
MERCURY (UG/L)						
			DET'N LIMIT = 0.010		GUIDELINE = 1.000 (A1)	
JAN	.	.	.	BDL	.	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	.	.	.	.010	.	.010
FEB	.	.	.	BDL	.	.010
MAR	.	.	.	.010	.	.010
APR	.	.	.	.010	.	.010
MAY	.020	.010	.	.010	.	BDL
JUN	.010	.010	.	BDL	.	BDL
JUL	!SS	!SS	.	BDL	.	.
AUG	.010	.010	.	BDL	.	.
SEP	.200	.110	.	.010	.	.010
OCT	.010	.010	.	.010	.	BDL
NOV	.010	.010	.	BDL	.	BDL
DEC	.010	.010	.	.160	.	.020

MANGANESE (MG/L) DET'N LIMIT = .001 GUIDELINE = .050 (A3)						
JAN	.	.	.004	.004	.007	.006
FEB	.	.	.004	.004	.006	.006
MAR	.	.	.004	.004	.006	.007
APR	.	.	.005	.005	.007	.007
MAY	.021	.002	.003	.003	.005	.006
JUN	.027	.002	.003	.003	.006	.007
JUL	.024	.001	.003	.003	.007	.006
AUG	.023	.003	.002	.002	.	.
SEP	.025	.001	.002	!BT	.	.
OCT	.016	.002	.002	.002	.007	.006
NOV	.013	.002	.002	.002	.004	.004
DEC	.008	.002	.002	.003	.005	.005

MOLYBDENUM (MG/L) DET'N LIMIT = 0.001 GUIDELINE = .50 (H)						
JAN	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL
APR	.	.	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	.001	BDL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL

NICKEL (MG/L) DET'N LIMIT = 0.001 GUIDELINE = .05 (F3)						
JAN	.	.	.021	BDL	BDL	.017

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	.	.	.012	BDL	.002	BDL
FEB	.	.	.004	BDL	BDL	BDL
MAR	.	.	.007	BDL	BDL	BDL
APR	.	.	.007	BDL	.002	BDL
MAY	BDL	BDL	.005	BDL	BDL	BDL
JUN	BDL	BDL	.009	BDL	.002	BDL
JUL	BDL	BDL	.017	BDL	.	.
AUG	BDL	BDL	.008	!BT	.	.
SEP	BDL	BDL	.008	BDL	.004	BDL
OCT	BDL	BDL	.004	BDL	.007	BDL
NOV	BDL	BDL	.009	BDL	BDL	BDL
DEC	BDL	BDL	.015	BDL	.001	BDL
LEAD (MG/L)						
			DET'N LIMIT = 0.003		GUIDELINE = .050 (A1)	
JAN	.	.	.016	BDL	.006	BDL
	.	.	.020	.004	.013	BDL
FEB	.	.	.007	BDL	.009	BDL
MAR	.	.	.009	BDL	.014	.004
APR	.	.	.006	BDL	.005	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.011	BDL	.004	BDL
JUL	BDL	BDL	.007	BDL	.	.
AUG	.003	BDL	.012	!BT	.	.
SEP	BDL	BDL	.003	BDL	.004	BDL
OCT	BDL	BDL	.004	BDL	.005	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	.007	BDL	BDL	BDL
STRONTIUM (MG/L)						
			DET'N LIMIT = .001		GUIDELINE = 2.00 (H)	
JAN	.	.	.120	.110	.120	.094
	.	.	.120	.110	.120	.110
FEB	.	.	.120	.120	.120	.120
MAR	.	.	.120	.120	.130	.120
APR	.	.	.120	.110	.110	.110
MAY	.100	.110	.100	.100	.110	.110
JUN	.110	.110	.110	.110	.120	.110
JUL	.110	.110	.110	.110	.	.
AUG	.100	.100	.100	!BT	.	.
SEP	.110	.110	.110	.110	.110	.110
OCT	.100	.100	.100	.100	.100	.097
NOV	.094	.100	.100	.100	.100	.100
DEC	.095	.094	.095	.094	.094	.088
URANIUM (UG/L)						
			DET'N LIMIT = .02		GUIDELINE = 20. (A2)	
JAN	.	.	.310	.300	.310	.330

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	.	.	.210	.230	.220	.220
FEB	.	.	.280	.240	.230	.220
MAR	.	.	.220	.200	.220	.230
APR	.	.	.260	.270	.240	.270
MAY	.250	.230	.290 <T	.280 <T	.260	.270
JUN	.260	.240	.210	.230	.220	.210
JUL	.250	.310	.260	.260	.	.
AUG	.020	.020	.030	!IS	.	.
SEP	.210	.300	.310	.340	.310	.390
OCT	.310	.280	.260	.270	.270	.270
NOV	.250	.260	.220	.250	.250	.240
DEC	.320	.310	.290	.320	.300	.300

VANADIUM (MG/L)		DET'N LIMIT = .001		GUIDELINE = .10 (H)		
JAN	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL
APR	.	.	BDL	BDL	.001	BDL
MAY	BDL	BDL	BDL	BDL	BDL	BDL
JUN	BDL	BDL	.001	.001	BDL	.001
JUL	BDL	BDL	BDL	BDL	.	.
AUG	BDL	BDL	BDL	!BT	.	.
SEP	BDL	.001	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	BDL	BDL

ZINC (MG/L)		DET'N LIMIT = .001		GUIDELINE = 5.00 (A3)		
JAN	.	.	.056	.001	.026	.002
FEB	.	.	.035	.002	.021	.002
MAR	.	.	.031	.001	.020	.002
APR	.	.	.037	.003	.021	.004
MAY	.004	BDL	.054	BDL	.009	.002
JUN	.012	.001	.028	BDL	.006	BDL
JUL	.003	.002	.048	BDL	.027	.002
AUG	.014	.008	.043	.003	.	.
SEP	.016	.002	.047	!BT	.	.
OCT	.003	BDL	.044	.004	.025	.006
NOV	.003	BDL	.027	.002	.011	.002
DEC	.002	BDL	.057	.007	.005	.002
			.056	.002	.006	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
METALS						
ARSENIC (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = .050		(A1)
JAN	.	.	.001	BDL	BDL	BDL
	.	.	BDL	BDL	BDL	BDL
FEB	.	.	BDL	BDL	BDL	BDL
MAR	.	.	BDL	BDL	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT			DISTRIBUTION SYSTEM			
SITE	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW

CHLOROAROMATICS						
HEXACHLOROETHANE (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 1900. (D4)		
JAN	.	.	.	.	.	BDL
	.	.	.	BDL	.	BDL
FEB	.	.	.	BDL	.	BDL
MAR	.	.	.	!SM	.	BDL
APR	.	.	.	BDL	.	BDL
MAY	BDL	BDL	.	!RO	.	6.000 <T
JUN	BDL	!SM	.	3.000 <T	.	6.000 <T
JUL	!SM	BDL	.	BDL	.	.
AUG	BDL	5.000 <T	.	!SM	.	.
SEP	BDL	BDL	.	BDL	.	BDL
OCT	!LD	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	!RO	.	!RO	.	!RO

236 TRICHLOROTOLUENE (NG/L)		DET'N LIMIT = 5.000		GUIDELINE = N/A		
JAN	.	.	.	.	.	BDL
	.	.	.	BDL	.	BDL
FEB	.	.	.	BDL	.	BDL
MAR	.	.	.	!SM	.	BDL
APR	.	.	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	!SM	.	BDL	.	BDL
JUL	!SM	BDL	.	BDL	.	.
AUG	BDL	51.000	.	!SM	.	.
SEP	BDL	BDL	.	BDL	.	BDL
OCT	!LD	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	!RO	.	!RO	.	!RO

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	
PESTICIDES & PCB							
ALPHA BHC (NG/L)			DET'N LIMIT = 1.000		GUIDELINE = 700.	(G)	
JAN	.	.	.	.	.	.	1.000 <T
	.	.	.	BDL	.	.	1.000 <T
FEB	.	.	.	2.000 <T	.	.	1.000 <T
MAR	.	.	.	!SM	.	.	1.000 <T
APR	.	.	.	BDL	.	.	BDL
MAY	BDL	BDL	.	BDL	.	.	1.000 <T
JUN	1.000 <T	!SM	.	1.000 <T	.	.	BDL
JUL	!SM	2.000 <T	.	1.000 <T	.	.	.
AUG	BDL	1.000 <T	.	!SM	.	.	.
SEP	BDL	3.000 <T	.	BDL	.	.	BDL
OCT	!LD	1.000 <T	.	BDL	.	.	BDL
NOV	BDL	BDL	.	1.000 <T	.	.	BDL
DEC	1.000 <T	!RO	.	!RO	.	.	!RO
BETA BHC (NG/L)							
			DET'N LIMIT = 1.000		GUIDELINE = 300.	(G)	
JAN	.	.	.	.	.	.	BDL
	.	.	.	BDL	.	.	BDL
FEB	.	.	.	BDL	.	.	BDL
MAR	.	.	.	!SM	.	.	BDL
APR	.	.	.	BDL	.	.	BDL
MAY	BDL	BDL	.	BDL	.	.	BDL
JUN	BDL	!SM	.	BDL	.	.	BDL
JUL	!SM	BDL	.	BDL	.	.	.
AUG	BDL	BDL	.	!SM	.	.	.
SEP	BDL	3.000 <T	.	BDL	.	.	BDL
OCT	!LD	BDL	.	BDL	.	.	BDL
NOV	BDL	BDL	.	BDL	.	.	BDL
DEC	BDL	!RO	.	!RO	.	.	!RO
LINDANE (NG/L)							
			DET'N LIMIT = 1.000		GUIDELINE = 4000.0 (A1)		
JAN	.	.	.	.	.	.	BDL
	.	.	.	BDL	.	.	BDL
FEB	.	.	.	1.000 <T	.	.	BDL
MAR	.	.	.	!SM	.	.	BDL
APR	.	.	.	BDL	.	.	BDL
MAY	BDL	BDL	.	BDL	.	.	BDL
JUN	BDL	!SM	.	2.000 <T	.	.	BDL
JUL	!SM	BDL	.	BDL	.	.	.
AUG	BDL	BDL	.	!SM	.	.	.
SEP	BDL	2.000 <T	.	BDL	.	.	BDL
OCT	!LD	BDL	.	BDL	.	.	BDL
NOV	BDL	BDL	.	BDL	.	.	BDL
DEC	BDL	!RO	.	!RO	.	.	!RO

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
PHENOL (UG/L)	PHENOLICS		DET'N LIMIT = 0.2		GUIDELINE = 2.00 (A3)	
MAY	.200 <T	.600 <T	.	.	.	.
JUN	.400 <T	.400 <T	.	.	.	.
JUL	.	.200 <T	.	.	.	.
AUG	BDL	.200 <T	.	.	.	.
SEP	BDL	BDL	.	.	.	.
OCT	.600 <T	BDL	.	.	.	.
NOV	BDL	BDL	.	.	.	.
DEC	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	

SPECIFIC PESTICIDES							
BLADEX (NG/L)			DET'N LIMIT = 100.00		GUIDELINE = 10000. (B3)		
JAN	-	-	-	1140.000	-	BDL	
	-	-	-	BDL	-	BDL	
FEB	-	-	-	BDL	-	-	
MAR	-	-	-	BDL	-	BDL	
APR	-	-	-	BDL	-	BDL	
MAY	BDL	BDL	-	BDL	-	BDL	
JUN	BDL	BDL	-	BDL	-	BDL	
JUL	-	BDL	-	BDL	-	-	
AUG	BDL	BDL	-	BDL	-	-	
SEP	BDL	BDL	-	BDL	-	BDL	
OCT	BDL	BDL	-	BDL	-	BDL	
NOV	BDL	BDL	-	BDL	-	BDL	
DEC	BDL	BDL	-	BDL	-	BDL	

SIMAZINE (NG/L)			DET'N LIMIT = 50.00		GUIDELINE = 10000. (B3)		
JAN	-	-	-	270.000 <T	-	BDL	
	-	-	-	BDL	-	BDL	
FEB	-	-	-	BDL	-	-	
MAR	-	-	-	BDL	-	BDL	
APR	-	-	-	BDL	-	BDL	
MAY	BDL	BDL	-	BDL	-	BDL	
JUN	BDL	BDL	-	BDL	-	BDL	
JUL	-	BDL	-	BDL	-	-	
AUG	BDL	BDL	-	BDL	-	-	
SEP	BDL	BDL	-	BDL	-	BDL	
OCT	BDL	BDL	-	BDL	-	BDL	
NOV	BDL	BDL	-	BDL	-	BDL	
DEC	BDL	BDL	-	BDL	-	BDL	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	
VOLATILES							
BENZENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 5.0	(D1)		
JAN	.	.	.	BDL	.	BDL	
	.	.	.	BDL	.	BDL	
FEB	.	.	.	BDL	.	BDL	
MAR	.	.	.	BDL	.	BDL	
APR	.	.	.	BDL	.	BDL	
MAY	BDL	BDL	.	BDL	.	BDL	
JUN	BDL	BDL	.	BDL	.	BDL	
JUL	BDL	BDL	.	.300 <T	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	BDL	.	.400 <T	.	.500 <T	
OCT	BDL	BDL	.	BDL	.	BDL	
NOV	BDL	BDL	.	BDL	.	BDL	
DEC	BDL	BDL	.	BDL	.	BDL	
TOLUENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 100.0	(G)		
JAN	.	.	.	BDL	.	BDL	
	.	.	.	BDL	.	BDL	
FEB	.	.	.	BDL	.	BDL	
MAR	.	.	.	BDL	.	BDL	
APR	.	.	.	BDL	.	BDL	
MAY	BDL	BDL	.	BDL	.	BDL	
JUN	BDL	BDL	.	BDL	.	BDL	
JUL	BDL	BDL	.	BDL	.	.	
AUG	BDL	.000 APS	.	BDL	.	.	
SEP	BDL	BDL	.	.150 <T	.	BDL	
OCT	BDL	.200 <T	.	.600	.	.100 <T	
NOV	BDL	BDL	.	BDL	.	.000 APS	
DEC	BDL	BDL	.	BDL	.	.050 UCS	
ETHYLBENZENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 3400.	(D3)		
JAN	.	.	.	BDL	.	BDL	
	.	.	.	BDL	.	BDL	
FEB	.	.	.	BDL	.	BDL	
MAR	.	.	.	BDL	.	BDL	
APR	.	.	.	BDL	.	BDL	
MAY	BDL	BDL	.	BDL	.	BDL	
JUN	BDL	BDL	.	BDL	.	BDL	
JUL	BDL	BDL	.	BDL	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	.100 <T	.	BDL	.	BDL	
OCT	BDL	.050 <T	.	.100 <T	.	.050 <T	
NOV	BDL	BDL	.	BDL	.	BDL	
DEC	BDL	BDL	.	BDL	.	BDL	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2		
			STANDING	FREE FLOW	STANDING	FREE FLOW	
P-XYLENE (UG/L)			DET'N LIMIT = 0		GUIDELINE = 620. (G)		
JAN	.	.	.	BDL	.	BDL	
	.	.	.	BDL	.	BDL	
FEB	.	.	.	BDL	.	BDL	
MAR	.	.	.	BDL	.	BDL	
APR	.	.	.	BDL	.	BDL	
MAY	BDL	BDL	.	BDL	.	BDL	
JUN	BDL	BDL	.	BDL	.	BDL	
JUL	BDL	BDL	.	BDL	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	BDL	.	BDL	.	BDL	
OCT	BDL	.000 RMP	.	.000 RMP	.	.000 RMP	
NOV	BDL	BDL	.	BDL	.	BDL	
DEC	BDL	BDL	.	BDL	.	BDL	
M-XYLENE (UG/L)			DET'N LIMIT = 0		GUIDELINE = 620. (G)		
JAN	.	.	.	BDL	.	BDL	
	.	.	.	BDL	.	BDL	
FEB	.	.	.	BDL	.	BDL	
MAR	.	.	.	BDL	.	BDL	
APR	.	.	.	BDL	.	BDL	
MAY	BDL	BDL	.	BDL	.	BDL	
JUN	BDL	BDL	.	BDL	.	BDL	
JUL	BDL	BDL	.	BDL	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	BDL	.	BDL	.	BDL	
OCT	BDL	.100 <T	.	.400 <T	.	.100 <T	
NOV	BDL	BDL	.	BDL	.	BDL	
DEC	BDL	BDL	.	BDL	.	BDL	
O-XYLENE (UG/L)			DET'N LIMIT = 0		GUIDELINE = 620. (G)		
JAN	.	.	.	BDL	.	BDL	
	.	.	.	BDL	.	BDL	
FEB	.	.	.	BDL	.	BDL	
MAR	.	.	.	BDL	.	BDL	
APR	.	.	.	BDL	.	BDL	
MAY	BDL	BDL	.	BDL	.	BDL	
JUN	BDL	BDL	.	BDL	.	BDL	
JUL	BDL	BDL	.	BDL	.	.	
AUG	BDL	BDL	.	BDL	.	.	
SEP	BDL	BDL	.	BDL	.	BDL	
OCT	BDL	.050 <T	.	.200 <T	.	.050 <T	
NOV	BDL	BDL	.	BDL	.	BDL	
DEC	BDL	BDL	.	BDL	.	BDL	

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
1,1 DICHLOROETHYLENE (UG/L)			DET'N LIMIT = 0		GUIDELINE = 7.0 (D1)	
JAN	.	.	.	BDL	.	.000 APS
	.	.	.	.000 APS	.	.000 APS
FEB	.	.	.	BDL	.	BDL
MAR	.	.	.	.000 APS	.	BDL
APR	.	.	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	.000 APS	.	.000 APS
JUL	BDL	BDL	.	BDL	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	BDL	.	.000 SPS	.	.000 SPS
OCT	BDL	.000 SPS	.	.000 SPS	.	.000 SPS
NOV	BDL	.000 APS	.	BDL	.	BDL
DEC	BDL	.000 APS	.	.000 APS	.	BDL
DICHLOROMETHANE (UG/L)			DET'N LIMIT = 0		GUIDELINE = 1750. (D3)	
JAN	.	.	.	BDL	.	BDL
	.	.	.	BDL	.	BDL
FEB	.	.	.	ICS	.	BDL
MAR	.	.	.	BDL	.	BDL
APR	.	.	.	ICS	.	ICS
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	BDL
JUL	BDL	BDL	.	BDL	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	BDL	.	1.500 UCS	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	1.000 UCS	.	3.000 UCS
CHLOROFORM (UG/L)			DET'N LIMIT = 0		GUIDELINE = 350.0 (A1+)	
JAN	.	.	.	143.000	.	120.000
	.	.	.	140.000	.	136.000
FEB	.	.	.	147.000	.	120.000
MAR	.	.	.	142.000	.	115.000
APR	.	.	.	165.000	.	130.000
MAY	BDL	150.000	.	150.000	.	180.000
JUN	BDL	181.000	.	175.000	.	132.000
JUL	BDL	200.000	.	227.000	.	.
AUG	BDL	190.000	.	190.000	.	.
SEP	BDL	141.000	.	185.000	.	142.000
OCT	BDL	150.000	.	159.000	.	123.000
NOV	BDL	128.000	.	130.000	.	153.000
DEC	BDL	95.900	.	93.500	.	77.600

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW

CARBON TETRACHLORIDE (UG/L)		DET'N LIMIT = 0		GUIDELINE = 5.0 (D1)		
JAN	.	.	.	BDL	.	BDL
	.	.	.	BDL	.	BDL
FEB	.	.	.	BDL	.	BDL
MAR	.	.	.	BDL	.	BDL
APR	.	.	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	BDL
JUL	BDL	BDL	.	BDL	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	.400 <T	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL

DICHLOROBROMOMETHANE (UG/L)		DET'N LIMIT = 0		GUIDELINE = 350.0 (A1+)		
JAN	.	.	.	6.000	.	6.000
	.	.	.	6.000	.	6.000
FEB	.	.	.	7.000	.	6.000
MAR	.	.	.	7.000	.	6.000
APR	.	.	.	7.000	.	7.000
MAY	BDL	8.000	.	8.000	.	12.000
JUN	BDL	7.000	.	7.700	.	6.800
JUL	BDL	10.000	.	10.000	.	.
AUG	BDL	9.400	.	9.900	.	.
SEP	BDL	11.500	.	10.300	.	8.800
OCT	BDL	10.300	.	10.600	.	9.200
NOV	BDL	12.800	.	9.500	.	8.400
DEC	BDL	8.600	.	7.600	.	6.800

CHLORODIBROMOMETHANE (UG/L)		DET'N LIMIT = 0		GUIDELINE = 350.0 (A1+)		
JAN	.	.	.	BDL	.	BDL
	.	.	.	BDL	.	BDL
FEB	.	.	.	BDL	.	BDL
MAR	.	.	.	BDL	.	BDL
APR	.	.	.	2.000	.	.700 <T
MAY	BDL	1.000	.	2.000	.	.600 <T
JUN	BDL	.200 <T	.	.200 <T	.	.200 <T
JUL	BDL	BDL	.	BDL	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	.400 <T	.	.400 <T	.	.300 <T
OCT	BDL	.300 <T	.	.300 <T	.	.300 <T
NOV	BDL	BDL	.	BDL	.	.100 <T
DEC	BDL	BDL	.	BDL	.	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

WATER TREATMENT PLANT				DISTRIBUTION SYSTEM		
SITE	RAW	TREATED	SITE 1	SITE 2		
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
T-CHLOROETHYLENE (UG/L)	)	DET'N LIMIT = 0		GUIDELINE = 10.0 (C2)		
JAN	.	.	.	BDL	.	BDL
	.	.	.	BDL	.	BDL
FEB	.	.	.	BDL	.	BDL
MAR	.	.	.	BDL	.	BDL
APR	.	.	.	BDL	.	BDL
MAY	BDL	BDL	.	BDL	.	BDL
JUN	BDL	BDL	.	BDL	.	BDL
JUL	BDL	BDL	.	BDL	.	.
AUG	BDL	BDL	.	BDL	.	.
SEP	BDL	.050 <T	.	.050 <T	.	BDL
OCT	BDL	BDL	.	.200 <T	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
TOTL TRIHALOMETHANES (UG/L)	)	DET'N LIMIT = 0		GUIDELINE = 350.0 (A1)		
JAN	.	.	.	149.000	.	126.000
	.	.	.	146.000	.	142.000
FEB	.	.	.	154.000	.	126.000
MAR	.	.	.	149.000	.	121.000
APR	.	.	.	174.000	.	137.700
MAY	BDL	159.000	.	160.000	.	192.600
JUN	BDL	188.200	.	182.900	.	139.000
JUL	BDL	210.000	.	237.000	.	.
AUG	BDL	199.400	.	199.900	.	.
SEP	BDL	152.900	.	195.700	.	151.100
OCT	BDL	160.600	.	169.900	.	132.500
NOV	BDL	140.800	.	139.500	.	161.500
DEC	BDL	104.500	.	101.100	.	84.400

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

COUNT OF PARAMETERS NOT FOUND ABOVE THE DETECTION LIMIT

SCAN	PARAMETER	ANALYSED	DETECTION LIMIT	GUIDELINE
----	-----	-----	-----	-----
CHEMISTRY (LAB)	CYANIDE	40	0.001	.200 (A1) MG/L
METALS	BERYLLIUM	64	0.001	.0002 (H) MG/L
	CYANIDE	40	0.001	.200 (A1) MG/L
	SELENIUM	64	0.001	.010 (A1) MG/L
CHLOROAROMATICS	HEXACHLOROBUTADIENE	39	1.000	450. (D4) NG/L
	123 TRICHLOROBENZENE	39	5.000	10000. (I) NG/L
	1234 T-CHLOROBENZENE	39	1.000	10000. (I) NG/L
	1235 T-CHLOROBENZENE	39	1.000	10000. (I) NG/L
	124 TRICHLOROBENZENE	39	5.000	10000. (I) NG/L
	1245 T-CHLOROBENZENE	39	1.000	38000. (D4) NG/L
	135 TRICHLOROBENZENE	39	5.000	10000. (D4) NG/L
	OCTACHLOROSTYRENE	39	1.000	N/A NG/L
	PENTACHLOROBENZENE	39	1.000	74000. (D4) NG/L
	245 TRICHLOROTOLUENE	39	5.000	N/A NG/L
	26A TRICHLOROTOLUENE	39	5.000	N/A NG/L
CHLOROPHENOLS	234 TRICHLOROPHENOL	4	50.	N/A NG/L
	2345 T-CHLOROPHENOL	4	50.	N/A NG/L
	2356 T-CHLOROPHENOL	4	50.	N/A NG/L
	245-TRICHLOROPHENOL	4	50.	2600000(D4) NG/L
	246-TRICHLOROPHENOL	4	50.	10000. (C1) NG/L
	PENTACHLOROPHENOL	4	50.	10000. (C1) NG/L
PAH	PHENANTHRENE	8	0	N/A NG/L
	ANTHRACENE	8	0	N/A NG/L
	FLUORANTHENE	8	0	42000 (D4) NG/L
	PYRENE	8	0	N/A NG/L
	BENZO(A)ANTHRACENE	8	0	N/A NG/L
	CHRYSENE	8	0	N/A NG/L
	DIMETH. BENZ(A)ANTHR	8	0	N/A NG/L
	BENZO(E)PYRENE	8	0	N/A NG/L
	BENZO(J) FLUORANTHEN	8	N/A	N/A NG/L
	BENZO(B) FLUORANTHEN	8	0	N/A NG/L
	PERYLENE	8	0	N/A NG/L
	BENZO(K) FLUORANTHEN	8	N/A	N/A NG/L
	BENZO (A) PYRENE	8	0	10 (B1) NG/L
	BENZO(G,H,I) PERYLEN	8	0	N/A NG/L
	DIBENZO(A,H) ANTHRAC	8	0	N/A NG/L
	INDENO(1,2,3-C,D) PY	8	0	N/A NG/L
	BENZO(B) CHRYSENE	8	0	N/A NG/L
	ANTHANTHRENE	8	N/A	N/A NG/L
	CORONENE	8	0	N/A NG/L
PESTICIDES & PCB	ALDRIN	39	1.000	700.0 (A1) NG/L
	ALPHA CHLORDANE	39	2.000	7000.0 (A1) NG/L
	GAMMA CHLORDANE	39	2.000	7000.0 (A1) NG/L
	DIELDRIN	39	2.000	700.0 (A1) NG/L
	METHOXYCHLOR	39	5.000	100000. (A1) NG/L
	THIODAN I	39	2.000	74000. (D4) NG/L

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

COUNT OF PARAMETERS NOT FOUND ABOVE THE DETECTION LIMIT

SCAN	PARAMETER	ANALYSED	DETECTION LIMIT	GUIDELINE
-----	-----	-----	-----	-----
PESTICIDES & PCB	THIODAN II	39	4.000	74000. (D4) NG/L
	ENDRIN	39	4.000	200.0 (A1) NG/L
	THIODAN SULPHATE	39	4.000	N/A NG/L
	HEPTACHLOR EPOXIDE	39	1.000	3000.0 (A1) NG/L
	HEPTACHLOR	39	1.000	3000.0 (A1) NG/L
	MIREX	39	5.000	N/A NG/L
	OXYCHLORDANE	39	2.000	N/A NG/L
	OPDDT	39	5.000	30000. (A1) NG/L
	PCB	39	20.000	3000. (A2) NG/L
	PP-DDD	39	5.000	N/A NG/L
	PPDDE	39	1.000	30000. (A1) NG/L
	PPDDT	39	5.000	30000. (A1) NG/L
	ATRATONE	38	50.	N/A NG/L
	ALACHLOR	38	500.	35000. (D2) NG/L
	ETHYLENE DIBROMIDE	40	0	50.0 (G) UG/L
	HCB	39	1.000	10.0 (C1) NG/L
SPECIFIC PESTICIDES	TOXAPHENE	39	N/A	5000. (A1) NG/L
	AMETRYNE	38	50.00	300000. (D3) NG/L
	ATRAZINE	38	50.00	60000. (B3) NG/L
	PROMETONE	38	50.00	52500. (D3) NG/L
	PROPAZINE	38	50.00	16000. (D2) NG/L
	PROMETRYNE	38	50.00	1000. (B3) NG/L
	SENCOR	38	100.00	80000. (B2) NG/L
	2,4,5-T	4	50.00	35000. (D2) NG/L
	2,4-D	4	100.00	100000. (A1) NG/L
	2,4-DP	4	100.00	N/A NG/L
	DICAMBA	4	100.00	87000. (B3) NG/L
	PICHLORAM	4	100.00	2450000. (D3) NG/L
	SILVEX	4	50.00	10000. (A1) NG/L
	DIAZINON	4	20.	14000. (A1) NG/L
	DICHLOROVOS	4	20.	N/A NG/L
	DURSBAN	4	20.	N/A NG/L
	ETHION	4	20.	35000. (G) NG/L
	GUTHION	4	N/A	N/A NG/L
	MALATHION	4	20.	160000. (G) NG/L
	MEVINPHOS	4	20.	N/A NG/L
	METHYL PARATHION	4	50.	7000. (B3) NG/L
	METHYLTRITHION	4	20.	N/A NG/L
	PARATHION	4	20.	35000. (B1) NG/L
	PHORATE	4	20.	35.0 (D2) NG/L
	RELDAN	4	20.	N/A NG/L
	RONNEL	4	20.	N/A NG/L
	AMINOCARB	4	N/A	N/A NG/L
	BENOMYL	4	N/A	N/A NG/L
	BUX	4	2000.	N/A NG/L
	CARBOFURAN	4	2000.	18000. (D3) NG/L
	CIPC	4	2000.	350000. (G) NG/L
	DIALATE	4	2000.	30000. (H) NG/L
	EPTAM	4	2000.	N/A NG/L
	IPC	4	2000.	N/A NG/L

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM PETERBOROUGH WATER TREATMENT PLANT 1987

COUNT OF PARAMETERS NOT FOUND ABOVE THE DETECTION LIMIT

SCAN	PARAMETER	ANALYSED	DETECTION LIMIT	GUIDELINE
-----	-----	-----	-----	-----
SPECIFIC PESTICIDES	PROPOXUR	4	2000.	90000. (G) NG/L
	SEVIN	4	200.	70000. (A1) NG/L
	SUTAN	4	2000.	245000. (D3) NG/L
	METOLACHLOR	38	500.	50000. (B3) NG/L
VOLATILES	T1,2DICHLOROETHYLENE	40	0	350. (D3) UG/L
	1,1 DICHLOROETHANE	40	0	N/A UG/L
	111, TRICHLOROETHANE	40	0	200. (D1) UG/L
	1,2 DICHLOROETHANE	40	0	5.0 (D1) UG/L
	1,2 DICHLOROPROPANE	40	0	10.0 (G) UG/L
	TRICHLOROETHYLENE	40	0	5.0 (D1) UG/L
	112 TRICHLOROETHANE	40	0	.60 (D4) UG/L
	BROMOFORM	40	0	350.0 (A1+) UG/L
	1122 T-CHLOROETHANE	40	0	0.17 (D4) UG/L
	CHLOROBENZENE	40	0	1510. (D3) UG/L
	1,4 DICHLOROBENZENE	40	0	75.0 (D1) UG/L
	1,3 DICHLOROBENZENE	40	0	130. (G) UG/L
	1,2 DICHLOROBENZENE	40	0	130. (G) UG/L
	TRIFLUOROCHLOROTOLUE	40	0	N/A UG/L
	ETHYLENE DIBROMIDE	40	0	50.0 (G) UG/L

Appendix A

DRINKING WATER SURVEILLANCE PROGRAM

The Drinking Water Surveillance Program (DWSP) for Ontario monitors drinking water quality at municipal water supply systems. The DWSP Database Management System provides a computerized drinking water quality information system for the supplies monitored. The objectives of the program are to provide:

- immediate, reliable, current information on drinking water quality,
- a flagging mechanism for 'Objective' exceedence,
- a definition of contaminant levels and trends,
- a comprehensive background for remedial action,
- a framework for assessment of new contaminants,
- and an indication of treatment efficiency of plant processes.

Program

The DWSP officially began in April 1986 and is designed to eventually include all municipal water supplies in Ontario; currently 44 plants are being monitored. Water supply locations have been prioritized for surveillance, based primarily on criteria such as population density, probability of contamination and geographical location.

An ongoing assessment of future monitoring requirements at each location will be made. Monitoring will continue at the initial locations at an appropriate level and further locations will be phased into the program as resources permit. It is estimated that after 4 years of operation, the program will be monitoring 90 locations.

A major goal of the program is to collect valid water quality data, in context with plant operational characteristics at the time of sampling. As soon as sufficient data have been accumulated and analysed, both the frequency of sampling and the range of parameters may be adjusted accordingly.

Assessments are carried out at all locations prior to initial sampling in order to acquire complete plant process and distribution system details, and to designate (and retrofit if necessary) all sampling systems and locations. This ensures that the sampled water is a reflection of the water itself.

Samples are taken of the raw (ambient water) and the treated water at the treatment plant, and of consumer's tap water in the distribution system. In order to determine possible effects of distribution on water quality, both standing and free flow water in old and new sections of the distribution system are sampled.

Sampling is carried out by operational personnel who have been trained in the applicable procedures.

Comprehensive standardized procedures and Field Test kits are supplied to sampling personnel. This ensures that samples are taken and handled according to standard protocols and that field testing will supply reliable data. All field and laboratory analyses are carried out using "approved documented procedures". All laboratory analyses are carried out by the MOE Laboratory Services Branch.

Data Reporting Mechanism

When the analytical results are transferred from the MOE laboratory into the DWSP system, printouts of the completed analyses are sent to the MOE District Officer, the appropriate operational staff and are also retained by the DWSP co-ordinator.

DWSP INPUTS AND OUTPUTS

The DWSP INPUTS and OUTPUTS are illustrated in Fig. 1.

PROGRAM INPUTS

PLANT AND DISTRIBUTION SYSTEM DESCRIPTION

The system description includes plant specific non-analytical information acquired through a questionnaire and initial plant visit. During the initial assessment of the plant and distribution system the questionnaire content is verified and

missing information added. It is intended that all data be kept current with scheduled annual updates.

The PLANT and DISTRIBUTION SYSTEM DESCRIPTION consists of the following seven components.

1. Process component inventory

All physical and chemical processes that the water is subjected to, from the intake pipe to the consumers' tap (where possible), are documented. These include: process type, general description of physical structures, material types, sizes, and retention time for each process within the plant. The processes may be as simple as transmission or as complex as carbon adsorption.

2. Treatment chemicals

Chemicals used in the treatment processes, their function, application point, supplier and brand-name are recorded. The chemical dosages applied on the day of sampling are recorded in DWSP.

3. Process control measurements

Documentation of in-plant monitoring of process parameters (turbidity, chlorine residuals, pH, aluminum residuals) including methods used, monitoring locations and frequency is contained in this section. In-plant monitoring results are generally not retained in DWSP but are retained by the Water Treatment Plant.

4. Design flow and retention time

The hydraulic capacity, designed and actual, is noted here. Retention time (the time that a block of water is retained in the plant) is also noted. The maximum, minimum and average flow as well as a record of the flow rate on the day of sampling are recorded in DWSP.

5. Distribution system description

This area includes the storage and transmission characteristics of the distribution system after the water leaves the plant.

6. Sampling system

Each plant is assessed for its adequacy in terms of sampling of bacteriological, organic and inorganic parameters. The prime considerations in the assessment and design of the sampling system are:

- i/ the sample is an accurate representation of the actual water condition, eg. raw water has had no chemical treatment;
- ii/ the water being sampled is not being modified by the sampling system;
- iii/ the sample tap must be in a clean area of the plant, preferably a lab area;
- iv/ the sample lines must be organically inert (no plastic, ideally stainless steel).

It is imperative that the sampled water be a reflection not of the sampling system but of the water itself.

The sampling system documentation includes: origin of the water; date sampling was initiated; size, length and material type (intake, discharge and tap), pump characteristics (model, type, capacity) and flow rate.

7. People

This section contains the names, addresses and phone numbers of current plant management and operational staff, distribution system management and operational staff, Medical Officer of Health and appropriate Ministry of Environment personnel associated with the plant.

FIELD DATA

The second major input to DWSP is field data.

Field data is collected at the plant and from the distribution system sites on the day of sampling. The field data consists of general operating conditions and the results of testing for field parameters. General operating conditions include chemicals used, dosages, flow and retention time on the day of sampling as well as monthly maximum, minimum and average flows. Field parameters include turbidity, chlorine residuals (free, combined and total), temperature and pH. These parameters are analysed according to standardized DWSP protocols to allow for interplant comparison.

LABORATORY ANALYTICAL DATA

The third major input to DWSP is Laboratory Analytical Data.

Samples gathered from the raw, treated and distribution sampling sites are analyzed for approximately 160 parameters at a frequency of two to twelve times per year. Sixty-five percent of the parameters are organic. The parameters measured may have health or aesthetic implications when present in drinking water. Many of the parameters may be used in the treatment process or may be treatment by-products. Due to the nature of certain analytical instruments parameters may be measured for in a "scan" producing some results for parameters that are not on the DWSP priority list but which may be of interest. The majority of the parameters are measured on a routine basis however, those that are technically more difficult and/or costly to analyse for are done less frequently. These include Specific Pesticides and Chlorophenols.

Although the parameter list is extensive, additional parameters with the potential to cause health or aesthetic related problems may be added provided reliable analytical and sampling methods exist.

All laboratory generated data is derived from standardized, documented analytical protocols. The analytical method is an integral part of the data and as methods change notation will be made and intercomparison data documented.

PARAMETER REFERENCE INFORMATION

The fourth major input to DWSP is Parameter Reference Information

This is a catalogue of information for each substance analysed on DWSP. It includes parameter name and aliases, physical and chemical properties, basic toxicology, world-wide health limits, treatment methods and uses. The Parameter Reference Information is computerized and can be accessed through the Query function of the DWSP database.

An example is shown in fig. 2.

A written copy (hard version) of the Parameter Reference Information will be available in the near future and is a new and sophisticated enhancement to the DWSP.

PROGRAM OUTPUTS

There are four major program outputs, Query, Action Alert, Report Generation and the Annual Report.

QUERY

All DWSP information is easily accessed through the Query function, therefore anything from addresses of plant personnel to complete water quality information for a plant's water supply is instantly available. The DWSP computer system makes relatively complex inquiries manageable. A personal password allowing access into the DWSP query mode in all MOE offices is being developed by the DWSP group.

ACTION ALERTS

Drinking Water quality in Ontario is evaluated against provincial objectives as outlined in the publication, Ontario Drinking Water Objectives (ISBN 0-7729-2725-1 revised 1983). This publication contains health-related Maximum Acceptable Concentrations for thirty substances. Should the reported level of a substance in treated water exceed the Ontario Drinking Water Objective an "Action Alert" requiring resampling and confirmation is issued. This assures that operational staff, health authorities and the public are notified as soon as possible of confirmation of an exceedance and remedial action taken. This report supplies a history of the occurrence of past exceedences at the plant plus a historical summary on the parameter of concern.

In the absence of Ontario Drinking Water Objectives, other agency guidelines which are documented in the Parameter Reference Information may be used. If these guidelines are exceeded the results are flagged and evaluated by DWSP personnel. An "Action Alert" will be issued if warranted.

REPORT GENERATION

Custom reports can be generated from DWSP to meet the needs of the regions and to respond to public requests.

ANNUAL REPORTS

It is the practice of DWSP to produce an annual report containing analytical data along with companion plant information.

FIG. 1

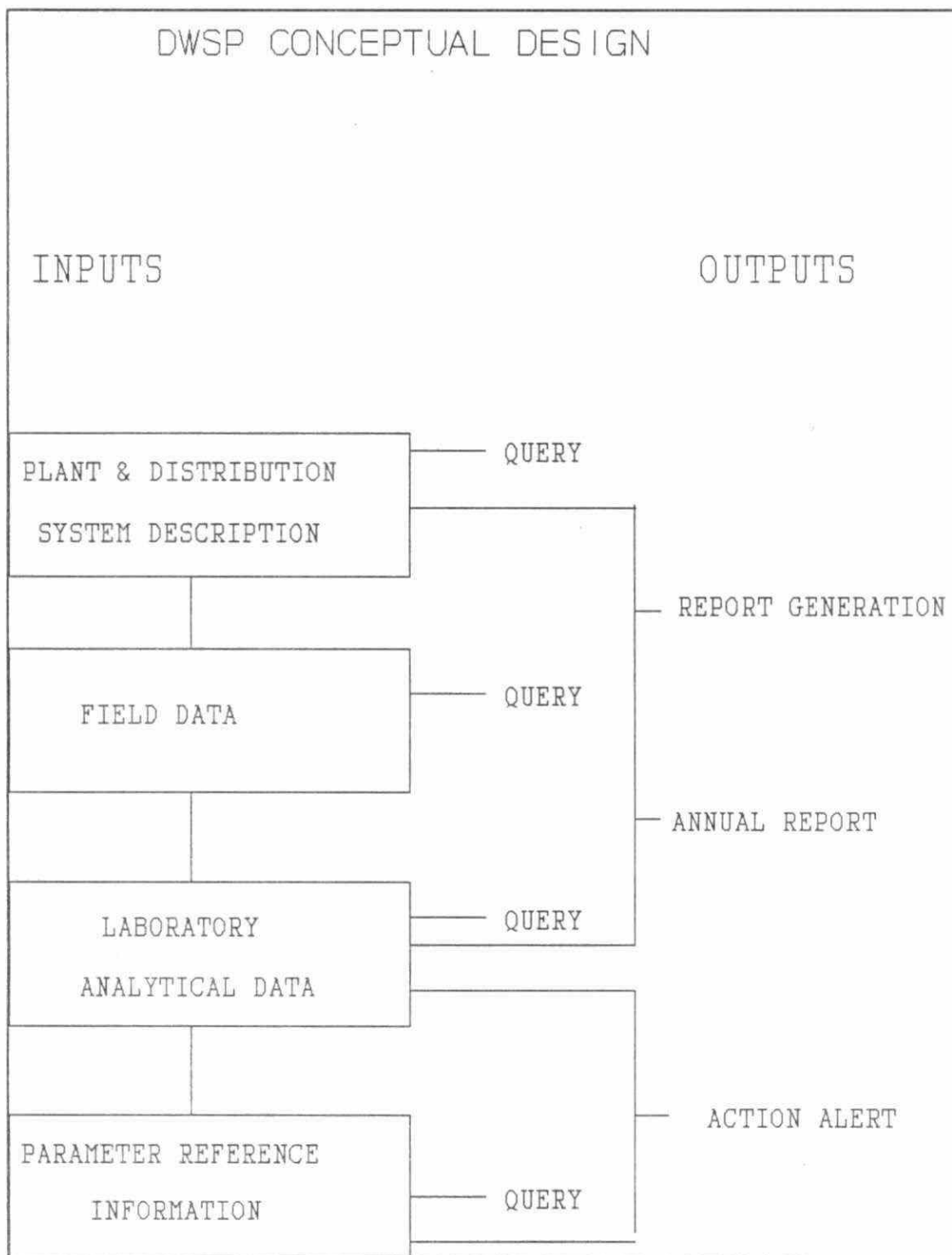


FIG.2

MOE - DRINKING WATER ASSESSMENT PROGRAM (DWSP)

(B2001P)
REFERENCE
BENZENE

PARAMETER

SOURCE FROM	TO	METHOD	TARG	UNIT	NOTE
EPA C 86/04		NOMETH	.00	063000 UG/L	RMCL
EPAA C 80/11		NOMETH	6.60	063000 UG/L	
FERC C 84/05		NOMETH	1.00	063000 UG/L	
WHO C 84/01		NOMETH	10.00	064000 UG/L	

DESCRIPTION: NAME: BENZENE

CAS#: 71432

MOLECULAR FORMULAE: C_6H_6

DETECTION LIMIT: (FOR METHOD POCODO) 0.05 UG/L

SYNONYMS: BENZOLE, COAL NAPHTHA, CARBON OIL (27),
CYCLOHEXATRIENE (41)CHARACTERISTICS: COLOURLESS TO LIGHT YELLOW, MOBILE,
NON-POLAR LIQUID, OF HIGHLY REFRACTIVE NATURE,
AROMATIC, VAPOURS BURN WITH SMOKING FLAME (30)

PROPERTIES:

SOLUBILITY IN WATER: 1780-1800 MG/L AT 25 DEG C (41)

THRESHOLD ODOUR: NO DATA

THRESHOLD TASTE: 0.5 MG/L IN WATER (39)

ENVIRONMENTAL FATE: MAY BIOACCUMULATE IN LIVING
ORGANISMS, APPEARS TO BIOACCUMULATE IN ANIMAL
TISSUES THAT EXHIBIT HIGH LIPID CONTENT OR ARE
MAJOR METABOLIC SITES (LIVER, BRAIN), SMALL
QUANTITIES EVAPORATE FROM SOIL OR DEGRADE QUICKLY
SOURCES: PETROLEUM REFINING, SOLVENT RECOVERY, COAL
TAR DISTILLATION, FOOD PROCESSING, TANNING.USES: PREPARATION OF ETHYL BENZENE USED AS A STYRENE
MONOMER, DETERGENTS, NYLON, AS INTERMEDIATE IN
PESTICIDE PRODUCTION, SOLVENT IN RUBBER INDUSTRY,
DEGREASING AND CLEANSING AGENT, GASOLINE.TOXICITY: RATING 4 (VERY TOXIC); ACUTE - IRRITATES
MUCOUS MEMBRANES, SYMPTOMS INCLUDE RESTLESSNESS,
CONVULSIONS, DEPRESSION, RESPIRATORY FAILURE;
CHRONIC - ANEMIA AND LEUKEMIA (45).

CARINOGENICITY: HUMAN CARCINOGEN AND MUTAGEN

REMOVAL: GAC ADSORPTION, PRECIPITATION WITH ALUM
FOLLOWED BY SEDIMENTATION, COAGULATION AND
FLOCCULATION, SOLVENT EXTRACTION, OXIDATION (41).

MOLECULAR WEIGHT: 78.12 GRAMS

MELTING POINT: 5.5 DEGREES C (27)

BOILING POINT: 80.1 DEGREES C (27)

SPECIFIC GRAVITY: 0.879 AT 20 DEGREES C (27)

VAPOUR PRESSURE: 100 MM AT 26.1 DEGREES C

HENRY'S LAW CONSTANT: 0.00555 ATM M_3 /MOLE

LOG OCT./WATER PAR.COEFF:K=1.0 1/N=1.6 R=.97 PH=5.3

Appendix B

DWSP SAMPLING GUIDELINE

i) RAW and TREATED at PLANT

General Chemistry	-500 mL clear plastic bottle -rinse bottle with sample three times and discard water -fill to line
Bacti	-250 mL clear glass bottle with white seal on cap -do <u>not</u> rinse bottle; preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL clear plastic bottle with white lid -rinse bottle and cap three times, discard -fill to line -add 10 drops nitric acid (Caution: HNO_3 is corrosive)
Volatiles (OPOPUP)	-250 mL clear glass bottle -do <u>not</u> rinse bottle -tilt bottle when filling -fill bottle completely; there should be no air bubbles.
Organic (OWOC), (OWTRI), (OAPAHX)	-1 liter brown glass bottle per scan -do <u>not</u> rinse bottle -fill to approx. 1" from top -when 'special pesticides' are requested three extra bottles per sample must be submitted
Cyanide	-500 mL clear plastic bottle -do <u>not</u> rinse bottle -fill to approx. 1" from top -add 10 drops sodium hydroxide (Caution: NaOH is corrosive)

Mercury

- 250 mL clear glass bottle
- rinse bottle and cap three times, discard then fill to top of label
- add 20 drops each nitric acid and potassium dichromate
- (**Caution:** HNO_3 and KCrO_7 corrosive)

Phenols

- 250 mL clear glass bottle
- do not rinse bottle
- fill to top of label as marked

Steps

1. Let cold water tap run for several minutes.
2. Record time in submission sheet.
3. Record teperature on submission sheet.
4. Fill up all bottles as per instructions.
5. Record chlorine residuals (free, combined and total for treated water only), turbidity and pH on submission sheet.

ii) Distribution Samples (standing water)

General Chemistry	-500 mL clear plastic bottle -rinse bottle with sample three times and discard -fill to line
Metals	-500 mL clear plastic bottle with white lid -rinse bottle and cap three times, discard -fill to line -add 10 drops nitric acid (Caution: HNO_3 is corrosive)

Steps:

1. Record time on submission sheet.
2. Place bucket under tap and open cold water.
3. Fill to predetermined volume.
4. After mixing the water, record the temperature on the submission sheet.
5. Fill general chemistry and metals bottles.
6. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.

iii) Distribution Samples (free flow)

General Chemistry	-500 mL clear plastic bottle -rinse bottle with sample three times and discard water -fill to line
Bacti	-250 mL clear glass bottle with white seal on cap -do <u>not</u> rinse bottle; preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL clear plastic bottle with white lid -rinse bottle and cap three times, discard -fill to line -add 10 drops nitric acid (Caution: HNO_3 is corrosive)
Volatiles (OPOPUP)	-250 mL clear glass bottle -do <u>not</u> rinse bottle; preservative has been added -tilt bottle when filling -fill bottle completely; there should be no air bubbles
Organic (OWOC), (OWTRI)	-1 liter brown glass bottle per scan -do <u>not</u> rinse bottle: preservative has been added -fill to approx. 1" from top
Cyanide	-500 mL clear plastic bottle -do <u>not</u> rinse bottle: preservative has been added -fill to approx. 1" from top -add 10 drops sodium hydroxide (Caution: NaOH is corrosive)
Mercury	-250 mL clear glass bottle -rinse bottle and cap three times, discard then fill to top of label -add 20 drops each nitric acid and potassium dichromate (Caution: HNO_3 and KCrO_7 corrosive)

Steps:

1. Record time on submission sheet.
2. Let cold water flow for ten minutes.
3. Record temperature on submission sheet.
4. Fill all bottles as per instructions.
5. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.

TD/434/P484/1988
Ontario. Ministry of the E
Peterborough Water
Treatment Plant. Annual
AVBC c. 1 ba Water